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ABSTRACT

The volume of test-norms and expectancy tables is intended as a tool for counselors in counseling individuals. The work contains a chapter on test interpretation to assist the counselor in relating individual test scores to other information about the individual. In the Minnesota Norms section of the tables, there are no data at the elementary level. At the secondary level there are two types of tests: scholastic aptitude (Lorge-Thorndike, and Differential Aptitude), and achievement (Iowa Tests of Basic Skills; Stanford Achievement, both advanced battery and high school battery; Iowa Tests of Educational Development; and the Minnesota English Test). Tests for post-high school include Minnesota Scholastic Aptitude, High School Percentile Rank by type of Minnesota College, and General Aptitude Test Battery by Training Groups. There are expectancy tables for the various campuses and colleges of the Univ. of Minnesota and other Minnesota colleges grouped according to the categories: Private Liberal Arts Colleges, State Colleges, and Junior Colleges. Finally, there are two interest tests results: Strong Vocational Interest Blank and Minnesota Vocational Interest Inventory. (AG)

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MINNESOTA TEST-NORMS
and
EXPECTANCY TABLES

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Developed in Cooperation
with
Pupil Personnel Services Section
and
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MINNESOTA DEPARTMENT OF EDUCATION

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FOREWORD

The purpose of this loose-leaf publication, *Minnesota Test-Norms and Expectancy Tables,* is to provide counselors working in all settings with test results that should be useful in counseling with individuals. However, the value of any individual's test score depends upon the manner in which it is used. A single test score used in isolation could prove harmful to some students and in such cases students would be done a disservice. Test results must be considered together with all other information about students to be helpful in the development of their vocational-educational plans. Dr. Dallis Perry's chapter on test interpretation was written especially to assist the counselor to take all these factors into consideration in the utilization of test data for individuals.

The booklet is loose-leaf so that it may be kept current by adding new test information as it is developed.

ACKNOWLEDGEMENTS

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Individuals singled out for their contribution include Dr. Gary Joselyn, Minnesota State-Wide Testing Programs, who compiled and edited the entire publication; Dr. Dallis Perry, Assistant Director, Student Counseling Bureau, University of Minnesota, Minneapolis who wrote the chapter on test interpretation; Dr. David Pucel and Dr. Howard Nelson of the Minnesota Research Coordination Unit in Occupational Education for data from project MINI-SCORE training norms, and the Student Counseling Bureau's Technical Division staff who prepared the many tables and figures.

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INTERPRETING STANDARDIZED TEST SCORES

Dallis K. Perry

Uses of Tests

Standardized tests are used to assist in making a wide variety of educational decisions:

Which students should be selected for Special Program A?

What educational and vocational plans are reasonable for Student B?

For what level of instruction in mathematics is Student C ready?

Has Class D made the expected progress in science?

How successful is the new social studies curriculum in School E?

Test scores provide just one of many kinds of information that must be evaluated and integrated to answer these questions. The ways in which such information is used in educational administration, instruction, and guidance is the subject of such disciplines as educational evaluation, teaching methodology, and counseling and is beyond the scope of this discussion; but, before we use test results in any way, we must understand what information is contained in the test scores – what it is they do and do not tell us.

Cronbach's (1970) definition of a test as "a systematic procedure for observing a person's behavior and describing it with the aid of a numerical scale or category system" is perhaps as satisfactory as any. The tests with which we are concerned are standardized tests – standardized both with respect to the presentation of the stimuli (items) that elicit the behavior that is observed and with respect to the reference data by which the numerical results are interpreted. The score that results directly from a test operation is ordinarily an arbitrary and quite meaningless figure. A considerable portion of test technology is concerned with procedures for transforming such "raw" scores to scales that "build in" significance through their relation to one or more kinds of reference information. Two general classes of transformed scores are "norm-referenced" scores, which indicate relative standing in comparison with a specified reference group, and "criterion-referenced" scores, which relate test performance to the kind of behavior exhibited by, or expected from, the examinee. Underlying the interpretation of both kinds of scores are the concepts of validity and accuracy of measurement and the assumption that the tests have been presented to students in a standard manner. The following sections discuss test administration circumstances and the concepts of measurement accuracy, validity, norm-reference, and criterion-reference as they influence the interpretation of standardized test scores.

Test Administration

Fundamental to a standardized test is the equivalence of test content from one student to another, which makes possible comparison of scores. It is essential that this standardization not be compromised by special instructions, assistance, or failures in test security that may effectively alter the content in unknown ways for some students. Testing conditions cannot, of course, be identical for all examinees, but they should be comparable in every way possible. Because most educational tests are regarded as measures of maximum performance, each student must have an opportunity to do his best. Satisfactory physical conditions of lighting, heating, ventilation, space, and work surfaces are assumed, as well as rigid adherence to specified directions and time limits. Equally important, and much more difficult to control, are the internal conditions that each student brings to the test. If a test score is to represent maximum performance, the effort and therefore the motivation to do well on the test must be comparable to that expected in the situations to which the test score is related. Test manuals and administration directions give little attention to pretest preparation and instruction of examinees. A clear explanation of the purpose and significance of the tests, without resorting to exhortation, is preferable to presentation of the tests as a required but unexplained task. Motivation cannot be completely standardized, of course, and the counselor or teacher with specific knowledge of each student as well as of the testing situation can best judge whether a given test score should be accepted at face value, regarded with extra caution, or disregarded completely because of the circumstances in which it was obtained.

Accuracy of Measurement

No single test score is completely representative of the "universe" of behavior for a person. A test score is based on a sample of behavior, and scores based on different samples can be expected to vary. Interpretation of the score must take into account the amount of such variation to be expected under given circumstances. This variation is usually expressed as "error of measurement", considered to be the difference between the observed score and a hypothetical "true" score consisting of the mean of a very large number of measurements of the same kind on the same person.

Standard Error of Measurement

The standard deviation of the distribution of measurements on a person, of which the person's true score is the mean (or equivalently the standard deviation of the differences between true and observed scores), is called the standard error of measurement (s.e.m.) for that person. Although the s.e.m. on a test varies from one person to another, in practice the average s.e.m. over a sample of persons is determined as an estimate of the s.e.m. on the test for each person.

The s.e.m. of a test indicates the extent to which a person's scores obtained by repeated measurement of the same kind would vary around the person's true score. It may be pictured as shown in Fig. 1. Within the range of ± 1 s.e.m from a person's true score will fall 68% of his obtained scores, and 95% will fall within ± 2 s.e.m. If the s.e.m. is 3, for example, the probability is 68% that any observed score is within 3 points of the true score.

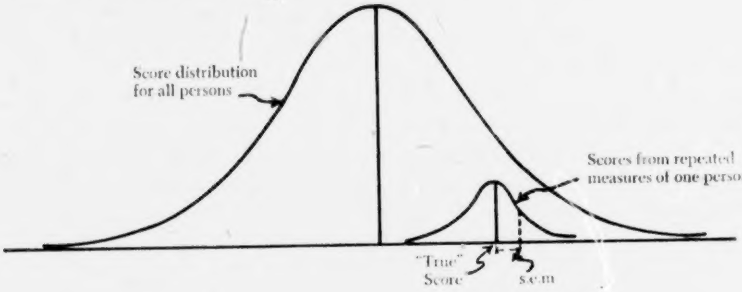


Figure 1. Standard error of measurement in relation to observed score distribution.

The s.e.m. of a test is important because it emphasizes that an observed test score is just an estimate and not a precisely determined number, and at the same time it quantifies the dependability of the score. Test scores are sometimes reported as ranges or bands, typically extending 1 s.e.m. above and below the observed score, with or without the observed score indicated. Although the interpretation of such ranges is difficult to specify precisely in probability terms, they have the advantage of emphasizing to users the limits of score dependability.

In evaluating scores on a test with reference to its s.e.m., two points should be considered:

1. The reported s.e.m. is an estimate of the *average* s.e.m. for all persons who take the test. Individuals differ in their variability as well as in their true scores, so the actual s.e.m. is not the same for all persons. The s.e.m. of a well-constructed test should not be correlated with test scores, but in practice persons near the extremes of a distribution are less likely to be measured accurately than those near the middle. This situation may arise, for example, if the test has insufficient "ceiling" so that differences among the more able students cannot be detected, or if it is so difficult for some students that they respond randomly or by excessive guessing.

2. Different procedures used to estimate the s.e.m. of a test ascribe different sources of observed score variance to error. It is important to keep in mind the sources of variance represented in the s.e.m., and, therefore, the generalizability of the score. Internal consistency procedures (Kuder-Richardson formulas, split-half, odd-even) or alternate form correlations generally include as error that variance due to sampling of test content and that due to momentary factors that differentially influence performance during a single testing occasion. Factors that would differentially affect scores on another occasion are ascribed to "true" score variance. Retesting at a different time with the same instrument leads to the inclusion of differences due to testing occasions, but not differences due to content sampling, in the error variance estimate.

Reliability Coefficients

As Fig. 1 implies, the error variance ordinarily is much smaller than the total variance on a test. If it were not — if all the variance were error variance — there would be no true score variance and the test would have no value. Interpretation of the s.e.m. of a test depends in part on *how much* smaller than total score variance it is. An s.e.m. of 3 has quite different significance for a test with a standard deviation of 4 than for a test with a standard deviation of 40. The variance of a group of test scores is composed of the error variance plus the true score variance, or

$$S^2_{\text{observed}} = S^2_{\text{true}} + S^2_{\text{error}} \qquad (1)$$

The relationship of these variances is usually expressed as the *ratio* of true score variance to total score variance, called the reliability coefficient,

$$r = S^2_T/S^2_o \qquad (2)$$

Because true score variance, and therefore total observed variance, is a function of the heterogeneity of the group being measured, a reliability coefficient reflects both group and test characteristics, whereas the error component of scores on a test, (s.e.m. squared) is regarded as a characteristic of the test, fixed for all groups. In interpretation of an individual test score the s.e.m. most directly indicates the confidence that can be placed in the score, but the stability of the score with respect to an entire group of scores, as indicated by the reliability coefficient, also should be known. Given the standard deviation of the group in question one can, from (1) and (2) above, compute either s.e.m. or r from the other according to the familiar formulas

$$\text{s.e.m.} = S_o\sqrt{1-r} \qquad (3)$$

$$r = 1 - \frac{(\text{s.e.m.})^2}{S_o^2} \qquad (4)$$

Internal consistency reliability of the Minnesota Scholastic Aptitude Test (MSAT) was found to be .93 (Layton, no date), which indicates, according to formulas (3) and (4), a s.e.m. about one-fourth as large ($\sqrt{.07} = .26$) as the standard deviation of 13.8, or about 3.7. Referring to the MSAT norm table we find that, if, for example a student's "true" score is at the 71st percentile (RS = 44), about two-thirds of the time in repeated testing his observed MSAT score would be between the 63rd and 70th percentiles. He would obtain a score below the 54th percentile less than 3% of the time.

Validity

The most critical information underlying the interpretation of test scores is how well the scores measure the characteristic the test is being used to measure, i.e. how *valid* is the test for the purpose to which it is being put. Because a test may be used for many purposes, it may have many validities and even several different kinds of validity. Different kinds of validity are generally classified into three categories: content validity, criterion-related validity, and construct validity.

Content Validity

When a test is used to determine a person's current knowledge or performance in a domain represented by the test, evidence of how well the test actually represents the domain is required to establish the *content validity* of the test. Such evidence usually takes the form of an analysis of the domain into subdivisions, description of the subdivisions, and identification of the items related to each subdivision. In educational achievement tests such subdivisions usually correspond to educational objectives. It is important that both subject matter content and process be included in the analysis and description of the test.

Establishment of a test's content validity requires demonstration not only of what the test does measure but also of what it does not measure. Extraneous factors that are measured by a test but are not conceptually a part of its content lower its content validity. Two of the most common such influences are reading skill and working speed, because so many achievement tests are composed of written items and are given with time limits.

The careful analysis and description of the measurement domain which characterize the establishment of content validity distinguish it from "face validity", which refers to the superficial appearance, or even name, of a test. Motivation may be better if test items appear to examinees to be relevant to the purposes of testing; therefore, face validity may be desirable, but it is not the same as content validity.

Criterion-related Validity

When a test is used to predict a specific kind of performance other than that measured by the test itself, evidence is required that the test scores are indeed related to the other, criterion, performance. Such evidence is most commonly presented in the form of a coefficient of correlation between test and criterion scores.

Clearly, a test has as many validities as criteria. Thus the median correlation of MSAT scores with grades of freshmen in Minnesota colleges is .43, which demonstrates its validity as a measure of scholastic aptitude; but the coefficients in individual colleges vary from .10 to .76.

Adequate evidence of criterion-related validity requires not only a validity coefficient of sufficient size to be useful but also a criterion measure that truly represents the behavior or performance to be predicted. School marks or grades are the most commonly used educational criteria, and tests validated against such measures must be used with awareness of the limited scope of relevant behavior represented in the criterion. Nevertheless, because grades do represent a significant aspect of achievement and one that may be critical in determining continuation and completion of an educational program, correlation of test scores with grades is an important and meaningful indication of validity.

Construct Validity

Criterion-related validity is invaluable for use of a test to aid in reaching a decision, e.g., choice of college, regarding a specific course of action, the outcome of which can be measured in some way, e.g., by subsequent course grades. However, we cannot expect that tests will have been specifically validated against criteria for all decisions of all students who may be aided by a better understanding of their capabilities and characteristics as measured by tests. For effective counseling use of tests to help understand students and to help students understand themselves we must know "what the test measures", apart from its prediction of behavior in specific situations. Evidence of the meaning of test scores in terms of the psychological characteristics, or constructs, represented by the scores is termed "construct validity". Such evidence may take the form of analysis of the content of the test, synthesis of criterion-related validity coefficients, correlations with other tests, factor analysis, differences or similarities of scores of specified groups (e.g., age or educational levels), item analysis, observation of test-taking behavior, and influence of training or experience on scores. As with evidence of content validity, demonstration of what the test does not measure is as important as demonstration of what it does measure.

Interpretation of the Differential Aptitude Tests (DAT) for counseling secondary school students, for example, depends largely on construct validity. Although the DAT manual reports more than 5,000 predictive validity coefficients, few counselors will have such evidence available for their students and for criteria specifically relevant for their students. Focusing on the Mechanical Reasoning (MR) test we find by examining the items that they deal with gears, levers, pulleys, the application of forces, and similar principles that are part of the content of physical mechanics. The items are presented pictorially, with verbal questions about the pictures, so the test requires some reading ability; but the questions and the words in them are short and should be easily understood. Correlations of about .5 to .6 with the Verbal Reasoning test and with various intelligence tests indicate that MR is measuring something different than verbal ability, and item analyses of the very similar Mechanical Reasoning Test indicate that it is measuring a general mechanical ability, not separate "levers ability", "gears ability", etc. (Cronbach, 1970). On the average MR correlates higher with high school grades in science than in other subjects (although it is not the best DAT predictor of science grades), and it was found to be an effective predictor of vocational school performance of machine shop students but not of auto mechanics students. Girls' scores on the test tend to be substantially lower and less reliable than boys' scores and to have higher correlations with grades in "unrelated" high school courses such as English and social science, suggesting that the test functions somewhat differently for the two sexes. Because MR is a revision of earlier Mechanical Comprehension Tests, evidence that scores on the latter are related to evaluations of training and job performance of various jobs concerned with machinery supports the construct validity of MR. Finally, MR scores are correlated about .4 with mechanical and scientific interests of boys as measured by the Kuder Preference Record and negligibly with other interests. Again, the relationships for girls are lower. Taken together the evidence briefly summarized above supports the notion that MR measures a meaningful characteristic of students, one that is appropriately labeled "mechanical reasoning", is not the same as general intelligence, and is important in certain scientific and mechanical pursuits though not in every activity labelled "mechanical".

Establishment of construct validity in a different domain is illustrated by the development of the Academic Achievement (AACH) scale for the Strong Vocational Interest Blank (Campbell and Johansson, 1966). This scale was developed by selecting SVIB items that significantly differentiated between students with high grades in college and high school and those with low grades. The scale correlated about .35 with high school and college grade averages in a cross-validation sample drawn from the same population as that on which the scale was constructed and also in a 25-year-old sample of college freshmen tested in the 1930's. Low correlations with MSAT scores show that the scale is not just another measure of scholastic aptitude, and the AACH score adds slightly to the multiple correlation of HSR and MSAT with college GPA. In 10-year and 25-year follow-up groups the scale showed substantial differences between students who dropped out of college and, in order, those who obtained BA, MA, and PhD degrees. Scores were found to increase until about age 28 and then remain relatively stable. Examination of the item content indicates that items scored positively represent scientific, aesthetic, and intellectual activities, whereas those scored negatively involve sales, business, and manual skills. AACH scores of occupational groups are ranked very much like the average educational levels of the groups, with scientists (biologists, mathematicians, psychiatrists, physicists) at the top and policemen, forest service men, pilots, and office workers at the bottom. Scores of outstanding persons in 10 occupations showed similar differences, with outstanding composers, novelists, astronauts, and psychologists scoring high and outstanding life insurance salesmen, military men, and football coaches scoring low. In summary the AACH scale appears to measure interest in activities that lead to getting good grades and continuing in school, but it is not a measure of scholastic aptitude as such nor a predictor of success within occupations.

Norm-Referenced Scores

A norm-referenced score indicates an individual's standing in comparison with a standard reference group of persons who have taken the same test. In the interpretation of norm-referenced scores both the nature of the score transformation and the nature of the reference group must be considered.

Score Transformations

The most commonly used norm-referenced scores are *percentiles, standard scores,* and *grade equivalents.*

PERCENTILES. Percentile scores indicate relative standing in a group in very much the way rank ordering does, and they are often called percentile *ranks.* Because the meaning of a given rank depends on the size of the group ranked, percentiles adjust for group size by, in effect, indicating the equivalent of rank order in a standard group of 100 scores. The concept of rank order and the analogy of "a ladder with 100 rungs" are easy to understand, and percentiles are much used because of the ease with which their meaning can be communicated. The most likely misunderstanding of percentiles is an interpretation of them as indicating "percent correct", and in reporting test results to students and parents it is important to insure that this interpretation is not made.

A distribution of percentile scores from a group comparable to that on which the percentile norms are based will be rectangular, that is, will have about the same number of cases at each score. There will be, for example, about the same number of scores at the 98th percentile as at the 50th. Because there are far more cases near the middle of the raw score distribution than near the extremes, a small raw score change results in a much larger percentile change near the middle than near the extremes. This tendency to accentuate differences among mid-range scores and de-emphasize differences among extreme scores is a major disadvantage of percentiles.

Standard scores. This disadvantage is avoided by standard scores, in which differences are proportional to raw score differences. Standard scores are anchored at the mean of the norm group distribution, with units proportional to the standard deviation of the norm group distribution. The basic standard score transformation (z-score) is made by subtracting the mean from each score and dividing the remainder by the standard deviation, producing a score with mean of zero and standard deviation of 1. Because the fractional and negative scores produced by the z-score transformation are inconvenient, transformations that assign more units to the standard deviation and a positive score to the mean are usually used for score interpretation. Some standard score transformations commonly encountered by Minnesota test users, are:

Score	Mean	S.D.	Relation to z
Stanine	5	2	2z + 5
ITED, ACT	15	5	5z + 15
T-Score (Stanford HS)	50	10	10z + 50
GATB	100	20	20z + 100
CEEB	500	100	100z + 500

Because standard score differences are proportional to raw score differences, comparisons of scores in different parts of the distribution are less subject to misinterpretation than comparisons of percentiles; and standard scores can be manipulated mathematically to obtain meaningful averages, correlations, etc. The meaning of a standard score is not immediately clear, however, without some understanding of its relation to a normal distribution of scores. Fig. 2 pictures this relationship for several standard score scales as well as for percentiles.

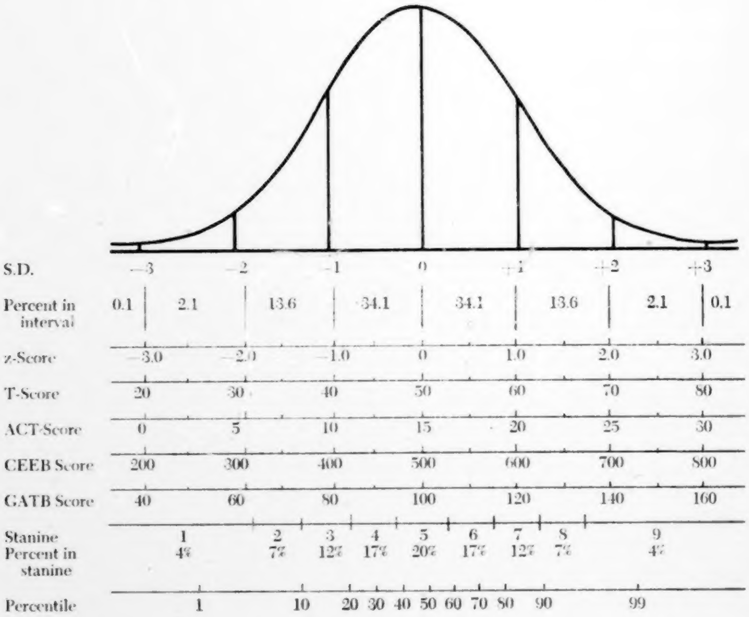


Figure 2. Common score scales and the normal distribution.

Grade equivalents. Whereas a percentile or a standard score indicates the location of a score within one specified norm group distribution, a grade-equivalent score identifies a specific score distribution for which the obtained score is the median. The score distribution is for students at a particular grade level. For example, if the grade equivalent for a raw score of 38 is 4.0, 38 would be the median score of the norm group of beginning 4th-graders. Decimal parts are added to represent fractions of a 10-month school year, so that a grade equivalent of 4.2, for example, represents the median of students tested at the end of the second month of the 4th grade. Although there is a hypothetical norm group for each separate grade equivalent, in practice only a few levels are tested within the range of grade equivalents reported. A junior high school achievement test might be normed on students tested in the middle of the seventh (7.5), eighth (8.5) and ninth (9.5) grades, for example. Intermediate grade equivalents are determined by interpolation, and equivalents below the lowest group tested and above the highest group tested are determined by extrapolation.

Because grade equivalents are especially convenient for measuring progress, and because the significance of the score that is "built in" in the form of reference to educational levels seems especially easy to understand, grade equivalents are widely used. They have some disadvantages, however, that should cause users to interpret them with special caution. Although the meaning of a grade equivalent of 6.6 for a student in the middle of the 6th grade is clear, the meaning of the same score for a student in the middle of the 4th grade is less clear because we have no guidance as to whether such a deviation from the "expected" score is rare and significant or common. Certainly the two scores represent different kinds of achievement and have quite different meanings for the two students. Because students do not progress at the same rate in different subjects nor in the same subject at different levels, comparisons across subjects are difficult to interpret. At the high school level, where students are not taught every subject every year, grade equivalents have largely been abandoned for this reason. Finally, grade equivalents seem especially likely to be misinterpreted as performance standards. It seems easier to accept the notion that, on the average, half the students in the class must be below the 50th percentile than that half must be below "grade level".

Perhaps the simplest source of misunderstanding of a test score to be guarded against is confusion among the concepts underlying the various score transformations. A score of 75, for example, might be a grade equivalent with the decimal point omitted (common practice), a percentile rank, a standard score: mean 50, or a standard score: mean 100. Knowledge and understanding of the specific transformation is obviously essential to correct interpretation of the score.

Norm Groups

Because the meaning carried by norm-referenced scores is relative standing in a defined reference group, the characteristics of the reference group are most important.

Size. The group must have adequate size to provide stable results. If the norm group is a sample from a large population, it must be large enough so that variations due to sampling are minimized. Even when the norm group can be regarded as the entire population, as, for example, with school or class norms, anomalous and possibly misleading norms may be obtained if the group is very small. For this reason, local norms computed in the Minnesota High School Statewide Testing Program are based on two years' testing if possible when the size of a single class is less than 50.

Representativeness. Adequate size does not insure that a norm group will be adequately representative of the population specified. Norm groups are frequently difficult to obtain, and it is rare that samples can be randomly selected. The factors that do influence selection are likely to cause the norm group to be unrepresentative in unknown ways. Norms for the MSAT are based on the scores of nearly every Minnesota high school junior in a given year, and their representativeness is thereby assured. Minnesota norms for tests in the High School Statewide Testing Program, on the other hand, must be based on substantially less than the total population of Minnesota students in a given class because testing practices vary considerably among schools. To provide more assurance of representativeness norms for these tests are based on scores of students from schools whose combined MSAT score distribution is the same as that of the state as a whole. To the extent that the distributions of ability being normed parallel the distribution of scholastic aptitude measured by MSAT, this procedure increases the representativeness of the norms. "User norms", which are based on all the students from a defined population who happen to have taken the test, should be especially suspect.

Currency. Norms must be representative not only at the time they are developed but also at the time they are used. Norms that are not current may be misleading because they do not reflect educational and occupational changes. The MSAT, for example, was normed in 1959 on entering Minnesota college freshmen who had been tested as high school juniors. To provide consistency of interpretation from year to year this norm has been continued even though it cannot be relied on to represent the present Minnesota college population. Consequently, more current norms for high school juniors and various types of colleges also are presented.

Appropriateness. Given technical soundness in the form of adequate size, representativeness, and currency of a norm group, it is also important to consider the appropriateness of a norm group both for the student and for the decisions to be made. The student may be currently a member of the populations represented by some norms, so their appropriateness for the student is assured. A 9th-grade Minnesota student who has taken the Lorge-Thorndike Intelligence Test (LTIT) and the Iowa Test of Educational Development (ITED) is a member of the populations represented by local school, Minnesota, and national norms for each test, all of which are appropriate for him. For decisions about his educational experiences in the immediate future, the local norms would be most appropriate because they indicate how he compares with his classmates in various areas. For longer-range planning the Minnesota norms, because they represent the students with whom he would most likely be compared in other high schools or post-high school institutions, would be more helpful. National as well as state norms might be used in evaluating how well the school's educational program achieved in various domains the kind of educational development expected for students with ability levels like those in the school.

For example, Alice's LTIT Verbal and Non-verbal scores of 59 and 52 put her at the 73rd percentile according to 9th-grade Minnesota norms, indicating an above-average student. On local norms for her school, however, these scores are at the 99th and 93rd percentiles, respectively, which suggest that she is likely to move much more rapidly than most of her classmates and may require special material to enable her to apply her abilities appropriately. In another school Brian's 9th-grade LTIT scores of 60 and 51 give him local percentile scores of 49 and 46, indicating an average student who should progress with the rest of the class. His percentiles of 75 and 70 on state norms, however, show above average ability, suggesting that his educational program should be one that will support many possible post-high school options.

Some norms represent populations of which the student is only potentially, not currently, a member. The MSAT, for example, offers both types. Each student who takes the test is clearly a member of the high school junior norm group, but only potentially a Minnesota college freshman. Similarly, the Minnesota Vocational-Technical School norms for scores on the General Aptitude Test Battery (GATB) and Minnesota Vocational Interest Inventory (MVII) represent applicants who successfully completed various training programs. Such norms indicate not only relative standing in the norm population, but also whether it is reasonable to consider the student as a member of the population in the first place. Cathy's MSAT score of 32 is average (53rd percentile) among high school juniors and also among Minnesota junior college freshmen (51st percentile), somewhat below average among State College freshmen (35th percentile), and substantially below average among liberal arts college freshmen (11th percentile). Nevertheless, Cathy clearly is a potential member of any of these groups, and it is reasonable to explore additional information about all three types of college. Douglas' MSAT score of 20, however, giving him a liberal arts college percentile of 1, indicates not only that Douglas' chances of successful performance in most Minnesota liberal arts colleges are quite low but also that his more specific estimates of performance in such colleges (see "Criterion-Referenced Scores") may not be applicable to Douglas because he is quite unlike the populations on which they are based. He is, however, a potential member of the junior college population (12th percentile), and performance estimates based on this group would be meaningful. It is important to note that, although members of such norm groups are identified after they become members of the defined population, their status at the time they were tested was the same as that of the students to whom the norms are applied. Thus the Minnesota college freshmen norm groups were tested as high school juniors, and the vocational-technical program graduates were tested as applicants for the programs. Some norms, such as those often reported for employees in various occupations, are based on groups of persons already in the defined population at the time they are tested. In applying such norms to persons who are only potential members of the norm population, the influence on the test results of status at time of testing must be considered.

Multi-Score Tests

Profiles. Although the principles of test interpretation apply whether there is a single score or several, additional considerations are involved in tests or test batteries that produce multiple scores. Such scores are commonly presented on *profiles,* which offer a convenient means of displaying several items of information. A test profile is simply a graphic representation of several scores on comparable scales. Fig. 3 is an example of one such profile, showing Edwin's

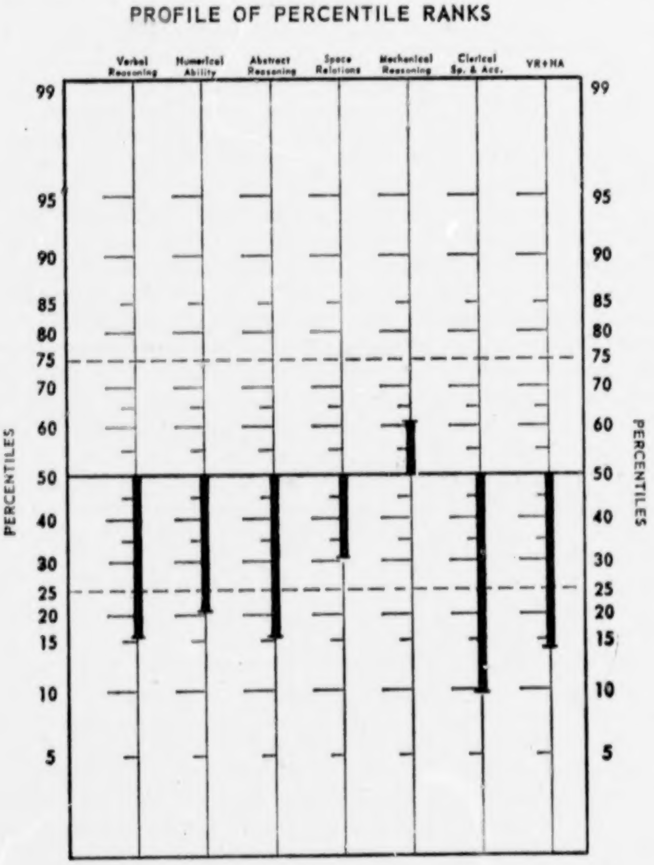


Figure 3. Edwin's DAT profile

Minnesota percentile scores on the DAT plotted as vertical bars extending above or below the midpoint of the score range for each test. Profiles are often prepared also with adjacent scores connected to each other, rather than to the midpoint of the scales, with straight lines, as in Fig. 4. The key word in the definition of a test profile is "comparable". It is inappropriate to profile raw scores because there is no basis for comparing raw scores on one test with those on another. The raw scores must be transformed to scales with comparable units, such as percentiles or standard scores. Furthermore, the transformations for all tests must be based on the same norm group. The provision of such comparability was an important objective and is now a basic feature of standardized batteries of aptitude and achievement tests.

Difference scores. Because profiles do make score comparison easy, it is important to guard against over-interpretation of the differences that appear. The concept of error of measurement is especially important in evaluating differences in scores because the measurement errors cumulate, making the differences less reliable than the separate scores. In psychometric terms the standard error of the difference, S. E.$_D$, is given by

$$\text{S. E.}_D = \sqrt{S^2_{e1} + S^2_{e2}} \qquad (5)$$

where S_{e1} and S_{e2} are the standard errors of the two tests whose scores are being compared. If the two standard errors are equal, formula (5) indicates that S.E.$_D$ is about 1.4 times the standard errors of the individual tests. Computation of S.E.$_D$ is cumbersome, and test publishers commonly offer convenient guides to the significance of score differences. When scores are reported as percentile bands, as on School and College Ability Tests and Sequential Tests of Educational Progress, bands that do not overlap are regarded as representing reliably different true scores. The manual for the High School Stanford Achievement Test (SAT) includes a table of standard errors of difference for each pair of tests in the battery, which should be consulted in evaluating SAT profiles. The reported S.E.$_D$ of 5 for Spelling and Numerical Competence, for example, indicates that only one-third of the time would differences as large as 5 be obtained if the true scores for these abilities are equal, and only 5% of the time would differences as large as 10 be obtained.

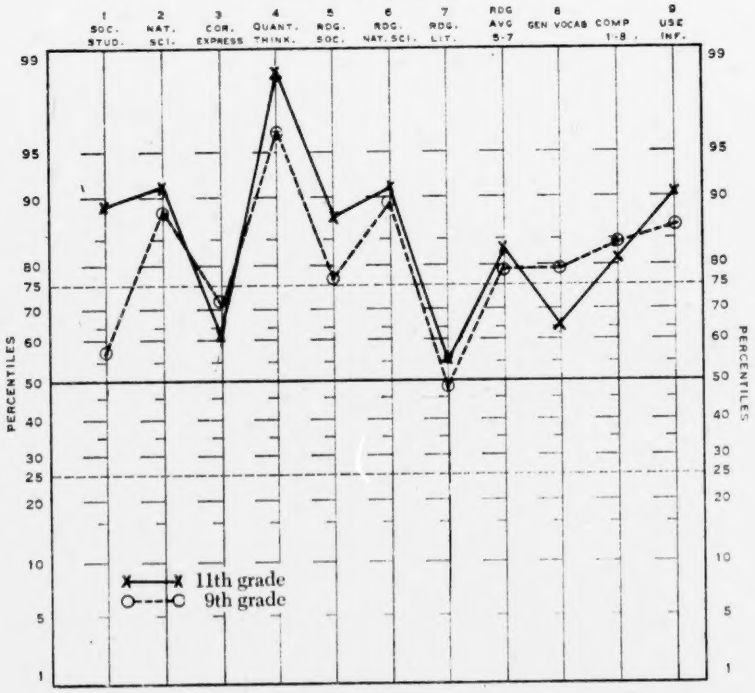
Nearly all of the SAT S.E.$_D$'s range from 4 to 6, although a few are as small as 3. Standardized tests used for individual student diagnosis and guidance should generally have reliabilities close to .9, which will provide S.E.$_D$'s of about half a standard deviation (5 points on the SAT standard score scale). Following a practice established by the publishers of the DAT, the profiles for the multi-score tests in the

Minnesota Statewide Testing Program are printed with 1 inch=1 S.D. =2 S.E.$_D$ (approximately), so that differences of one inch or more correspond to a critical ratio of 2 (5 percent significance level) and may be regarded as significantly different. It is suggested that differences of one-half inch be interpreted if confirmed by other evidence. Comparison of Edwin's DAT scores in Fig. 3 with the 50th percentile reference line indicates that his scores are generally low, only the score on Mechanical Reasoning reaching the average level. Of the individual scores, Mechanical Reasoning is significantly different from all except perhaps Space Relations; whereas the others, despite their apparent differences, are sufficiently similar that differences among them should not be emphasized.

The "one-inch rule" is approximate, of course. It is conservative when the reliabilities of the tests exceed .9; and, of the tests in the Minnesota Statewide Testing Program, the Arithmetic Applications Test in the Stanford Advanced battery, Iowa Tests of Basic Skills Arithmetic Problems and Work-Study Skills subtests, and DAT Mechanical Reasoning test (for girls) have reliabilities too low for score differences to be interpreted in this way.

PROFILE APPLICATIONS. Profiles conveniently display both the overall level of a student's scores and areas of strength or weakness. Thus Frank's 11th-grade ITED scores in Fig. 4 show generally superior performance, with special strength in mathematics and some weakness in English expression, literature, and vocabulary. The scores provide a basis for discussion with Frank of his high school program for the remainder of his junior and senior year and of his post-high school plans. The counselor may wish to suggest that Frank concentrate on improving his communication skills in preparation for college work. Fig. 4 illustrates another use of profiles, namely for examining change. Frank's performance is very consistent from the 9th- to the 11th-grade, except for a fairly sizable improvement in his social studies score. This change may reflect an unusual course sequence in Frank's case, or perhaps the development of new interests.

A test profile is a convenient way to summarize group as well as individual test performance. Overall performance of a school or class can be evaluated in comparison with the norm-group average, and strengths and weaknesses can be noted in the same way as with individual scores. Similarly the scores of the same group at two different times or of two different groups at the same time can be plotted on one profile to facilitate group comparisons and reveal changes. Special care must be taken in evaluating the magnitude of group differences in terms of score scales based on individuals, because the mean scores of groups are much less variable than individual scores. Whereas an individual percentile score of 60 differs rather inconsequentially from the midpoint of the norm group, a group mean at the 60th percentile is likely to be extremely high in comparison with other groups. Precise interpretation of such differences requires norms of group means.



PROFILE OF PERCENTILE RANKS

Figure 4. Frank's ITED scores

To learn more about the nature of group differences revealed by the profile it may be helpful to examine the distributions of scores for individual tests. Fig. 5 shows 9th-grade percentile scores for the Minnesota norm group and the local percentiles for one school plotted against raw scores on the SAT-HS English Test. (Either percentile scores or cumulative percentages can be used, but both groups must be represented in the same way.) The school's average score is somewhat below the state mean, but the graph shows that this difference appears almost entirely in the lower part of the score distribution. This evidence does not explain the lower mean score, of course. One possibility is that the curriculum or the instruction is such that insufficient attention has been given to the less able students. An equally tenable hypothesis is that the English achievement scores reflect a similar distribution of learning ability of the students in the school.

This hypothesis could be checked by examining scores of the same students on a general intelligence test such as LTIT in comparison with state norms.

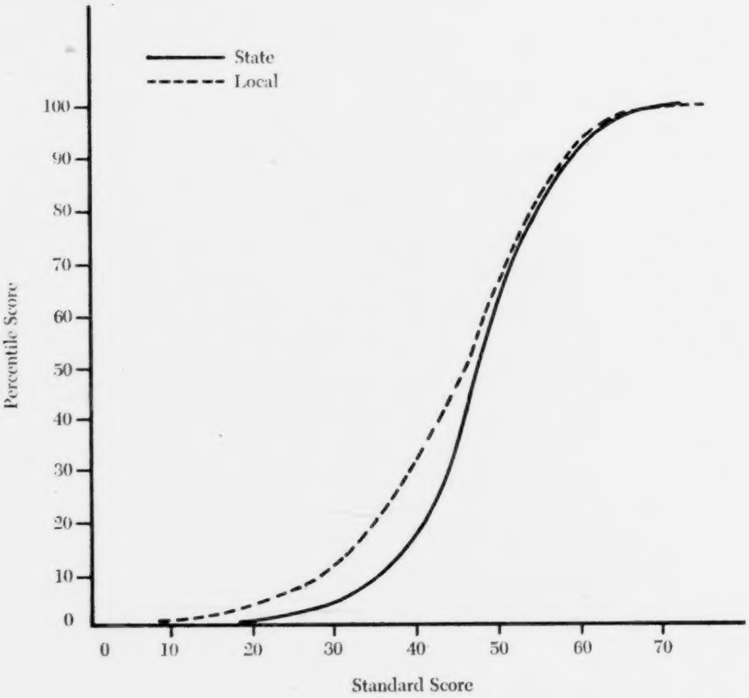


Figure 5. SAT-HS English score distributions for state and a local group.

Similarity indexes. We sometimes wish to compare a student's scores with each of several reference groups. This may be done either by transforming the student's scores into standard scores or percentiles based on each reference group in turn, or by displaying the reference group distributions as well as the student's performance in terms of a single norm. Minnesota vocational training program norms for the GATB and MVII are of the latter type. As a student's scores are compared with each of several groups and similarities and differences are noted, questions of *how* different the student is from a given group, or *which* group he is most like, arise; and the multiple comparisons produce more information than even profiles can conveniently summarize. To summarize such comparisons and obtain answers to questions like those above, indexes of profile similarity are used. One such index, the centour score, is reported as part of the Statewide Vocational Testing Program. Centour scores are like the scores on a target, where the bullseye, or the *center* (not the top) of the reference group, gets a score of 100, and the rings successively further in any direction from the center get successively lower scores. A centour score of zero, like missing the target completely, corresponds to a set of test scores outside of the "test space" occupied by any scores in the reference group. (In actual use centour scores are usually based on more than two test scores, and therefore more than two dimensions, and take into account not just differences in individual scores but also in score combinations. Consequently the "target" is elliptical rather than round, and multi-dimensional rather than flat.) Just as a student's percentile gives the percentage of scores in the norm group *lower* than his, the centour score gives the percentage of score combinations in the norm group "further out" than his. Like all summaries, centour scores both reveal and conceal information. A student's centour scores reveal his similarity simultaneously to a large number of reference groups in which he may be interested. At the same time they conceal the specific ways in which he is similar to and different from each of them. Centour scores of 50 for three different groups may result from a student's having all higher scores than the average for one group, all lower scores than the average for another, and some higher and some lower than the average for the third. The differences are important, and to discover them we must go back to each profile and consider it in detail.

For example, Greg's centour scores (Table 1) show little similarity to any of the 18 Minnesota Vocational School training programs for which the scores are reported. Examination of his aptitude scores indicates that they are all lower, some of them substantially lower, than average for students in these programs. These are not the only training programs available, of course, nor do these tests measure all important abilities. It will be necessary for the counselor to explore with Greg his possible strengths in other areas and the ways in which these strengths match possible training or job opportunities.

Helen's scores, like Greg's, are dissimilar to those of graduates of all 18 programs, but the reason is quite different in her case. Most of her aptitude scores are quite high in comparison with the vocational school population. Helen may want to start with a more academic program, perhaps in a junior college, where she would have an opportunity more gradually to narrow her focus on a career program or a college transfer curriculum.

Although none of Irene's centour scores is high, she does have several – Agri-technology, Clerical training, Cosmetology – that suggest a careful look at these fields. Her weakest ability, according to

TABLE 1

SVTP Scores for Five Students

Centours	Greg	Helen	Irene	Jerry	Karen
1. Aircraft Mechanics	0	0	1	50	1
2. Agri-Technology	0	9	21	39	7
3. Automotives	3	0	12	82	20
4. Electronics	0	2	1	86	9
5. Carpentry	0	0	0	68	1
6. Farm Equipment Mech	0	0	2	82	5
7. Machine Shop	0	0	1	82	5
8. Mech Drafting	0	0	0	90	4
9. Power Home Elect	1	0	4	81	7
10. Printing, Graphics	4	1	2	82	12
11. Welding	7	0	6	68	11
12. Accounting	0	3	6	63	29
13. Clerical	0	2	25	64	68
14. Cosmetology	0	3	24	44	71
15. Data Processing	0	3	3	60	27
16. Practical Nursing	0	16	12	68	74
17. Sales	0	0	4	72	34
18. Secretarial	0	20	10	48	70
Aptitudes					
1. General	70	124	78	113	107
2. Verbal	78	139	96	100	104
3. Numerical	54	117	81	107	107
4. Spatial	97	117	94	137	101
5. Form Perception	84	129	107	111	140
6. Clerical Perception	100	129	115	118	139
7. Motor	82	103	101	111	132

the aptitude scores, is in working with numbers (which also influences the G score). Neither the centour scores nor the aptitude scores provide any information about the relative importance of this weakness for various occupations, but both the "construct validity" of numerical ability and the lower mean N score of the Cosmetology students suggest that it may be less significant in the Cosmetology program than in either of the other two.

In contrast to the other students, Jerry's scores fall in the area where all the training groups overlap. As a result, all of his centour scores are high, including several that are very high. Although the high centour scores provide some guidance, Jerry's ability pattern fits well into all the training groups, and other considerations than his abilities will likely determine his choice.

The pattern of Karen's scores is similar to Irene's, but all of her aptitude scores are higher, and this difference is reflected in higher centour scores in more areas. In addition to clerical and cosmetology training, practical nursing and secretarial training offer good possibilities.

It is important to note that similarity indexes, like all norm-referenced scores, do not in themselves indicate the likelihood of behavior of any kind other than that required by the tests themselves. To predict from the test scores to behavior in other situations we must rely on information about test validity, which is not introduced or represented by the norming process.

INTEREST PROFILES. Interest profiles are a special case of score representation by profile. Because of the way occupational scales are constructed, the practice has developed of norming each scale on its own occupational group, rather than on a single standard reference group for all scales. On the SVIB and MVII the scores are standard scores with an occupational group mean of 50 and S.D. of 10; on the Kuder Occupational Interest Survey the scores are, in effect, correlations between the students' responses and those of each reference group. Such profiles must be interpreted somewhat differently from those based on a single norm group. To provide a comparable reference point the SVIB and MVII profiles show the mid-third range of scores for a standard men-in-general group on each scale. These considerations do not apply to the Basic Scales of the SVIB or the Homogeneous Scales of the MVII, which in each case are all normed on a single reference group.

Criterion-Referenced Scores

Whereas norm-referencing procedures provide meaning to test scores in terms of relative standing in a defined group of *persons,* criterion-referencing provides meaning in terms of expected *behavior.* The behavior may be defined by the test content itself, in which case we have content scores, or by a separate (criterion) measure, in which case we have predicted scores.

Content Scores

Scores on a content-referenced scale are summaries of the behavior on the test. Rate scores (e.g. reading rate, typing speed) and percentage scores are commonly used to represent performance, but to have meaning such scores must be accompanied by definitions of the content itself. Thus we have a "reading rate of 247 wpm on passages from The Readers' Digest," or "83 percent accuracy on 2-digit by 2-digit multiplication problems". If brief descriptions do not suffice to define the content, samples or examples may be used, such as "ability to spell 77 percent of words such as ambitious, anticipate, disappoint, eligible, indefinite, liability, miniature, oblige, sympathy, treasurer". To be most useful the content referred to should be not just described but scaled, so that mastery of a specified level implies mastery of all easier levels. Such scaling is just beginning in some fields, and few standardized instruments are available that reflect it. A fundamental requirement for the use of content-referenced scores, of course, is satisfactory content validity.

Predicted Scores

If criterion-related validity has been demonstrated, the validity relationship can be used to report test performance directly in terms of expected criterion behavior. This is usually done in the form of either criterion estimates or expectancy tables or graphs.

CRITERION ESTIMATES. Given a linear relationship between a test score (or scores) and a criterion variable, as reflected by a significant validity coefficient, an individual's expected score on the criterion variable can be predicted by the corresponding regression equation. From the correlation of .60 between College Aptitude Rating (CAR) and first-term grades (GPA) of University of Minnesota-Duluth freshmen, for example, we obtain the following equation for predicting GPA from CAR, where CAR is one-half the sum of high school rank (HSR) plus MSAT college percentile:

$$\text{GPA} = .74 + .02\ \text{CAR} \qquad (6)$$

From this equation we learn that the predicted UMD GPA corresponding to the minimum acceptable CAR of 40 is 1.54.

Like any test scores predicted scores are accompanied by uncertainty. In the case of predicted scores, however, this uncertainty is caused not only by the error of measurement of the test score, but also by measurement error in the criterion and by lack of perfect correlation between the true scores of the two measures. The combination of these three sources of error usually results in considerable imprecision in prediction, and it is important that this uncertainty be recognized in interpreting predicted scores. It is usually expressed as the standard error of estimate, computed as

$$S.E._{est} = S_c \sqrt{1-r^2}, \qquad (7)$$

where r is the validity coefficient and S_c is the criterion standard deviation, and interpreted as the standard deviation of observed criterion scores around each predicted score. Fig. 6 portrays the standard error of estimate in relation to the standard deviation of criterion scores.

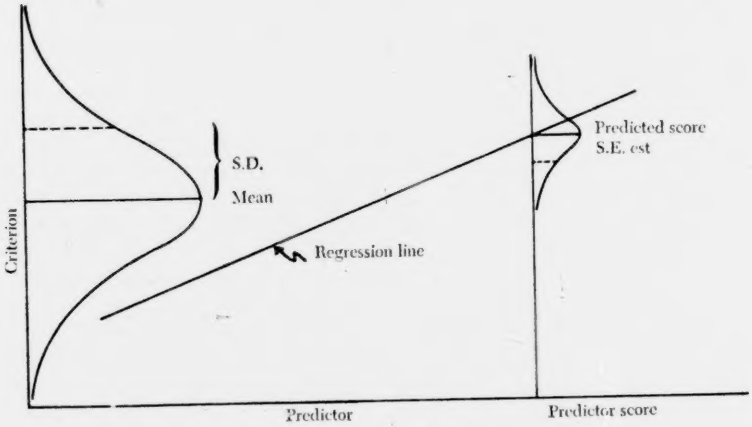


Figure 6. Relation of standard error of estimate to criterion standard deviation.

In the case of the UMD regression equation discussed above the standard error of estimate is computed from the validity coefficient and the criterion S.D. to be .60. This figure, combined with the predicted GPA obtained above, indicates that of students with a CAR of 40 two-thirds will obtain GPA's between .94 and 2.14 and 95% will obtain GPA's between .34 and 2.74. The importance of taking into account the error of estimate in interpreting predicted scores is indicated by the width of the range needed to provide considerable assurance that the criterion score will indeed be included in the predicted range.

Predicted scores are used, of course, not for persons whose criterion scores are known, but for a new group of individuals (e.g., applicants) who have not been measured on the criterion. The standard error of estimate does not take into account sampling error in determining the regression equation. Interpretation of a predicted score and its associated estimate of precision assumes that the score comes from the same population represented by the sample on which the regression equation was determined and that this sample is large enough to provide accurate estimates of the regression parameters for the population.

Expectancy Tables

Instead of predicting a specific criterion score and accompanying confidence band corresponding to each test score, a common practice is to report the probability of obtaining a criterion score within certain fixed ranges or above certain points. The criterion ranges for which probabilities are given are the same for all test scores, and the probabilities usually are reported for test score ranges rather than for individual scores. The Minnesota State-wide Testing Program expectancy tables relating high school rank (HSR) and MSAT score to first-term grades in each Minnesota college are examples of this method of criterion-referenced score interpretation. These tables were produced by determining the proportions of students in each fifth of the predictor distribution who obtained a college grade average of C or better and of B or better. Application of the tables can be illustrated with the scores of Linda, who has always done above average but not outstanding work in school (HSR=63) and has been developing a serious interest in art, in which she seems to have some talent. She wants a "good, general education" and plans to obtain it at the University of Minnesota, which she can attend while living at home. Her MSAT score of 36 is consistent with her high school record (junior percentile=68), and is sufficient to enter the College of Liberal Arts (college percentile=58). Linda's HSR is in the 60-79 range of the CLA expectancy table, which is clearly below average for CLA females (above 12% and below 59%) but indicates a reasonable probability (67%) of obtaining at least a C average. Her chances of getting a B average or better are not high (10%). Information provided by the MSAT expectancy table is consistent. Her college percentile, in the 40-59 range, is in the lowest quarter of entering CLA students and shows grade probabilities nearly identical to the HSR table. Linda has been considering, besides CLA, the applied arts program in the School of Home Economics. According to the AFHE expectancy tables Linda's scores are below average for entering freshmen here also, but not quite so far below, and her chances of getting satisfactory grades are somewhat higher (79% and 80%). Properly interpreted these data can help Linda understand some differences between the two colleges, consider the kind of program and level of intellectual challenge most appropriate for her, and stimulate her to seek further information to help her resolve the choice.

In the Minnesota expectancy tables the HSR ranges are based on the within-school HSR percentiles, whereas the MSAT ranges are based on the percentile scores for entering college freshmen. Thus, the sets of tables for the two variables present somewhat different information, not only because of their different content but also because they use different divisions of the total ability range. If the tables for each college were based on score ranges dividing the entering students in that college into approximately equal proportions, the tables would be more useful for that college; but, because the Statewide expectancy tables are intended for use in guidance of students considering attendance at various colleges, the same predictor ranges are used for all colleges to facilitate comparisons and avoid confusion. A compromise is offered for the more selective institutions by dividing the top range into two, making six ranges in all. Caution should therefore be used to avoid comparing grade expectations for scores in the top category (upper 10%) for these schools with expectations for scores in the top category (upper 20%) for the other colleges.

In comparison with criterion estimates based on regression equations, expectancy tables do not require a normal bivariate distribution underlying their interpretation, and they avoid an unwarranted appearance of precision. The uncertainties associated with measurement error and degree of relationship between the variables are reflected by the probability figures themselves. However, there are important cautions to be observed in using expectancy tables, cautions which reflect the fact that the tabled figures are actually proportions of previous classes rather than probabilities of future performance. (It has been suggested that they be called experience tables rather than expectancy tables.) First, in interpreting the figures as expectancies for new students we must assume that the composition of the new classes will be the same with respect to academic ability as the classes on which the tables are based and that they will be treated the same, i.e., that grading practices will remain the same. (Theoretically, it is unnecessary to assume that class composition remains the same if absolute marking standards do not change; but, because most grading is at least partly relative, it is more realistic to expect that a marked change in class composition will change the expectancies.) Entering classes will differ somewhat from year to year; but, unless there is a definite change in policy, such as an increase in admission standards, the differences are likely to be slight enough to maintain the validity of the expectancy tables. Over a period of years, however, such changes can cumulate, so the tables must either be reasonably current or be accompanied by evidence of consistency, such as predictor and criterion distributions that remain the same from year to year, if they are to be relied on. Second, it is important that each table be based on a group large enough to provide stable proportions. Like the standard error of estimate the expectancies reflect uncertainty due to measurement and prediction error but not that due to sampling variation. The number of cases in each predictor range (i.e., each row of the Statewide tables) determines the stability of the proportions for that range. It is for this reason that predictors are grouped into just five or six categories rather than a larger number that would permit more discriminating probability estimates. As it is, some ranges for small schools and even for large schools with skewed predictor distributions have too few cases for the computation of reliable proportions. The tables contain no expectancies for predictor ranges with fewer than 10 cases, but even with an N of 10 the standard error of the percentage may be as large as 16. With an N of 50 the standard error is not larger than 7. Because the classes on which the percentages are based are obviously not random samples from the schools' populations of entering students, interpretation of the standard error in terms of expected variation for future classes is not possible; but it is clear that the expectancies based on small N's should be used with extra caution. Finally, expectancy tables are necessarily based on the experiences of enrolled students; and these students form populations that differ from high school seniors in ways varying from one college to another as a result of both college admissions policies and practices and students' college selection decisions. To refer a student's score to a given expectancy table it must be reasonable to consider him a potential member of the population on which the table is based. If the table shows no scores in the range containing the student's score, it is clear that the table is not applicable to him. Even if a small percentage of the class had similar predictor scores, these students were atypical of their classmates with respect to these scores; and, inasmuch as they were enrolled despite this atypicality, they are likely to be atypical in unknown ways of students with similar scores. Thus, not only expectancies based on small N's, but also those based on small proportions of the class, should be viewed with caution.

Consider, for example, Michael's HSR of 36. The expectancy table for the U of M College of Liberal Arts indicates that Michael's chances of obtaining passing grades (57%) or a B average or better (11%) are slightly larger than those of boys with HSR's in the range of 40-59. The first explanation to be considered for anomalies of this kind in the tables is a small number of cases, but in this case the N of about 70 (4% of 1981) should be sufficient to avoid fluctuations of this size merely because of sampling error. As noted above, students who enroll in a college despite very low predictor scores are likely to have special strengths in other areas or high scores on other predictors.

Unless Michael has such strengths he would be unwise to rely too heavily on the tabled expectancies. For CLA, of course, because of the admissions requirement of an average HSR and MSAT percentile of 50, enrolled students with HSR's of 20-39 can be expected to have MSAT percentiles of at least 61-80.

When predictions of the same criterion are made from more than one predictor, the results will not always agree. Norma is thinking of going to St. Cloud State College, and referral of her MSAT percentile of 40 to the expectancy table indicates that her chances of obtaining passing grades on the average are 70%, but according to her HSR of 39 her chances of getting a C average are only 30%. Which is correct? Part of the discrepancy may be ascribed to the fact that Norma's scores are at the upper edge of one interval and at the lower edge of the other. The coarse grouping results in some inaccuracy. Thus Norma's chances for a C average are undoubtedly more like those of a student with HSR of 40, for which the tabled probability is 57%, than like those of a student whose HSR is 20, which is in Norma's interval with 30% probability. Some interpolation of probabilities may be made to adjust for this phenomenon, but even with such adjustments Norma's two predictions are discrepant. To determine which is more valid, Norma should consider with her counselor such information as whether special problems or responsibilities, which would not affect her college work, have held her high school grades down; whether her other test scores confirm the ability indicated by the MSAT score or suggest that it is singularly high; whether Norma's academic motivation and study habits have changed in such a way as to give her a better chance of success in college than her high school grades indicate.

As the considerations above suggest, the expectancy tables do not in themselves decide whether or not a student should attend a given college. The same probability of success that leads one student to choose a college may lead another to look elsewhere. A 30% chance of success may encourage one student, whereas a 70% chance may discourage another. Nor should the tables be used to "shop" for a college by seeking to identify the college in which the student has the best chance of obtaining good grades. But they do provide information, suggest additional questions, and supply some answers to help clarify tentative choices or narrow the field of possibilities.

DISCREPANCY SCORES. Expectancy tables may be used not only to help reach decisions about the future but also to help explain the past. In the latter application, comparison of actual performance with expectancies based on previous scores may aid a counselor in understanding that performance. Quite different explanations of a student's failing grades, and different courses of action, may be indicated if his probability of a passing average were, say 17%, than if it were 70%.

Expectancy tables especially intended for this kind of interpretation, rather than prediction, of performance are sometimes provided for combinations of ability and achievement test scores. The manual for the SAT High School Battery presents quartile scores for each achievement test based on the distributions of scores for students in each stanine on the Otis Gamma Mental Ability Test. Orley's standard score of 57 on the English test puts him well above average (national norms) for 11th-graders in general, but more than three-fourths of 11th-grade students with Otis scores in the 8th stanine, as his is, score higher. This information may lead the teacher or counselor to a different interpretation of his English score than its percentile equivalent alone. Because the interest in expectancy tables of this kind is on the discrepancy betwen the ability and achievement scores, they are discussed here under the heading of "discrepancy scores"; but in reality such expectancy tables do not give criterion-referenced scores at all. Neither the ability test nor the achievement test is a criterion. The ability test, rather, is used to divide the norm group into more homogeneous subgroups so that more specific norms can be provided. Emphasis on the norm-referenced character of this kind of information may help to avoid reification of score differences into concepts such as "underachiever" and "overachiever". At the very least it is important to be aware of the differences between criterion-referenced and norm-referenced expectancy tables. Thorndike (1967) has pointed out a paradox in connection with the latter, namely that their value depends on the existence of moderate, rather than very high or very low, relationships between ability and achievement scores. If the relationship is very low, of course, achievement norms for low-ability students will not be appreciably different than those for high-ability students; and subdivision of the norm group will be useless. If the relationship is extremely high, on the other hand, the tests will be measuring much the same thing; and discrepancies between scores on the two instruments will be due largely to measurement error and not subject to meaningful interpretation. For prediction purposes, of course, the higher the relationship represented in an expectancy table, the more helpful is the information.

Selected References

This summary of test interpretation principles is clearly no more than an overview of the psychometric technology that test users should understand if they are to interpret and apply test results effectively. It is hoped that it will serve both as a quick reference and as a review and reminder. For more detailed exposition both of general principles and of specific information about tests commonly used in Minnesota, the following references may be consulted.

Anastasi, A. *Psychological Testing* (3rd ed.). New York: Macmillan, 1968.

> This is a sound and comprehensive text, based on a thorough coverage of the relevant literature.

Bennett, G. K., Seashore, H. G., and Wesman, A. G. *Counseling from Profiles.* New York: Psychological Corporation, 1951.

> The case studies that are presented in this booklet are among the best aids that have appeared for bridging the gap between test scores and the reality behind the scores.

Campbell, D. P., and Johansson, C. B. "Academic interests, scholastic achievements and eventual occupation". *Journal of Counseling Psychology,* 1966, 13, 416-424.

> Exemplifies a varied approach to establishing the meaning of a new psychometric scale.

Cronbach, L. J. *Essentials of Psychological Testing* (3rd ed.) New York: Harper and Row, 1970.

> In addition to a thorough and excellent coverage of the field, this text includes the latest insights into measurement principles resulting from the author's continuing research in the field.

Gardner, E. T. "Interpreting Achievement Profiles—Uses and Warnings". *Measurement in Education,* 1970, 1, (2), 1-11.

> An especially helpful issue of a new series of reports from the National Council on Measurement on Education.

Goldman, L. *Using Tests in Counseling.* (2d ed.). New York: Appleton-Century-Crofts, 1971.

> As the title implies, in addition to presenting the fundamentals of test score interpretation, this text carries the process further into applications in the counseling situation.

Layton, W. L. Construction of a short form of the Ohio State University Psychological Examination. Student Counseling Bureau, University of Minnesota.

Standards for Educational and Psychological Tests and Manuals. Washington, D. C. American Psychological Association, 1966.

Thorndike, R. L. Expectancy tables – sense and nonsense. Paper presented to the 17th Annual Conference of the Minnesota Statewide Testing Programs, Minneapolis, September 16, 1967.

Thorndike, R. L. (ed.) *Educational Measurement,* Washington, D. C.: American Council on Education, 1971.

> The state of the art in educational measurement is represented by this compendium of articles by experts on the major technical topics in the field.

Minnesota State-Wide Norms

for

LORGE-THORNDIKE INTELLIGENCE TESTS

Form 1, Level E (Grades 7 & 8) and Level F (Grade 9)

1966

Males and Females Combined

These norms are for pupils who took the Lorge-Thorndike Intelligence Tests (LTIT) in the fall of 1965, through the Minnesota High School State-Wide Testing Program and are based on the "Multi-Level Edition" published in 1964.

Grade	N (Schools)	N (Students)
7	147	9,899
8	68	4,997
9	31	2,671

Tables are provided for the two batteries, Verbal and Nonverbal, and for the Total Score. The Total Score is the sum of the Verbal and Nonverbal raw scores.

The representativeness of these norms was checked by comparing the Minnesota Scholastic Aptitude Test (MSAT) distribution for schools using LTIT at each grade level with the appropriate MSAT distribution for all Minnesota high schools. MSAT is administered to virtually every Minnesota high school junior and is a good scholastic aptitude "bench mark" against which to judge the representativeness of any Minnesota norm group. After some slight adjustments, the distribution of MSAT means for schools using LTIT at each grade level very closely approximates the distribution of MSAT means for all Minnesota high schools. These LTIT norms thus appear to be quite representative of Minnesota students in general.

Minnesota State-Wide Norms for
LORGE-THORNDIKE INTELLIGENCE TESTS
Form 1, Level E
Revised 1965—Based on Fall Administration 1965

SEVENTH GRADE
Males and Females Combined

Percentile Rank	RAW SCORES Verbal	Non-Verbal	Total	Percentile Rank	RAW SCORES Verbal	Non-Verbal	Total
99	72+	63+	131+	49	..	..	90
98	70-71	62	128-30	48	47	42	89
97	69	61	126-27	47	..	..	..
96	68	60	124-25	46	..	..	88
95	67	59	122-23	45	46	41	87
94	66	..	121	44	..	..	..
93	65	58	120	43	..	..	86
92	64	..	119	42	45	40	85
91	..	57	118	41	..	..	..
90	63	..	117	40	44	..	84
89	62	56	116	39	..	39	..
88	..	..	115	38	..	..	83
87	61	55	114	37	43	38	82
86	..	..	113	36	..	..	81
85	60	..	112	35	..	..	..
84	..	54	111	34	42	37	80
83	..	..	..	33	..	..	79
82	59	53	110	32	41	36	78
81	..	..	109	31	..	..	..
80	58	..	...	30	..	35	77
79	..	52	108	29	40	..	76
78	..	..	107	28	..	..	75
77	57	..	...	27	39	34	74
76	..	51	106	26	..	..	73
75	56	..	105	25	..	33	72
74	..	..	...	24	38	..	71
73	..	50	104	23	..	32	70
72	55	..	...	22	37	31	..
71	..	..	103	21	..	..	69
70	54	49	...	20	36	30	68
69	..	..	102	19	..	..	67
68	..	..	101	18	35	29	66
67	53	..	...	17	34	28	64-65
66	..	48	100	16	..	..	63
65	..	..	99	15	33	27	62
64	52	..	..	14	..	26	61
63	..	47	98	13	32	25	60
62	..	..	..	12	31	24	58-59
61	51	..	97	11	30	23	57
60	..	46	..	10	..	..	55-56
59	..	..	96	9	29	21-22	53-54
58	50	..	95	8	28	20	52
57	..	45	..	7	27	19	49-51
56	..	..	94	6	25-26	18	48
55	49	..	93	5	..	17	45-47
54	..	44	..	4	24	16	43-44
53	..	..	92	3	22-23	14-15	39-42
52	..	..	..	2	19-21	12-13	35-38
51	48	43	91	1	0-18	0-11	0-34
50	..	..	..				

Minnesota State-Wide Norms for
LORGE-THORNDIKE INTELLIGENCE TESTS
Form 1, Level E
Revised 1965—Based on Fall Administration 1965
EIGHTH GRADE
Males and Females Combined

	RAW SCORES				RAW SCORES		
Percentile Rank	Verbal	Non-Verbal	Total	Percentile Rank	Verbal	Non-Verbal	Total
99	79+	66+	140+	49	..	..	101
98	77-78	65	138-39	48	..	..	100
97	75-76	64	136-37	47	53	46	..
96	..	..	134-35	46	..	..	99
95	74	63	133	45	..	..	..
94	73	62	132	44	52	45	98
93	72	..	130-31	43	..	..	97
92	71	61	129	42	..	..	..
91	70	..	128	41	51	44	96
90	..	60	127	40	..	..	95
89	69	..	126	39	..	..	..
88	..	59	125	38	50	43	94
87	68	..	124	37	..	..	93
86	..	..	123	36	..	..	92
85	67	58	122	35	49	42	91
84	..	..	...	34	..	..	..
83	66	..	121	33	48	41	90
82	..	57	120	32	..	..	89
81	65	..	...	31	47	..	88
80	..	..	119	30	..	40	87
79	64	56	118	29	..	..	86
78	..	..	117	28	46	39	..
77	..	..	...	27	..	..	85
76	63	55	116	26	45	38	84
75	..	..	...	25	..	..	83
74	62	..	115	24	44	37	82
73	..	..	...	23	..	36	81
72	..	54	114	22	43	..	80
71	61	..	...	21	42	35	79
70	..	..	113	20	..	..	78
69	..	53	...	19	41	34	77
68	60	..	112	18	..	33	76
67	..	..	111	17	40	..	75
66	..	52	...	16	..	32	73-74
65	59	..	110	15	39	31	72
64	..	..	...	14	38	30	70-71
63	..	51	109	13	37	29	69
62	58	..	...	12	36	28	67-68
61	..	..	108	11	35	27	66
60	..	..	107	10	..	26	64-65
59	57	50	...	9	34	25	62-63
58	..	..	106	8	33	23-24	59-61
57	..	..	105	7	31-32	22	57-58
56	56	49	...	6	30	20-21	54-56
55	..	..	104	5	29	19	51-53
54	..	..	...	4	27-28	18	48-50
53	55	48	103	3	24-26	15-17	44-47
52	..	..	...	2	21-23	13-14	37-43
51	..	..	102	1	0-20	0-12	0-36
50	54	47	...				

Minnesota State-Wide Norms for
LORGE-THORNDIKE INTELLIGENCE TESTS
Form 1, Level F
Revised 1965—Based on Fall Administration 1965

NINTH GRADE

Males and Females Combined

Percentile Rank	RAW SCORES Verbal	Non-Verbal	Total
99	76+	64+	135+
98	74-75	63	131-34
97	72-73	61-62	130
96	71	..	128-29
95	70	60	127
94	..	59	125-26
93	69	..	...
92	68	58	123-24
91	..	..	122
90	67	..	121
89	66	57	120
88	..	..	..
87	65	..	119
86	..	56	118
85	64	..	117
84	..	..	116
83	63	55	...
82	..	..	115
81	62	..	114
80	..	54	...
79	..	..	113
78	61	..	112
77	..	53	...
76	..	..	111
75	60	..	...
74	..	..	110
73	59	52	...
72	..	..	109
71	..	..	...
70	58	51	108
69	..	..	107
68	..	..	...
67	57	..	106
66	..	50	...
65	..	..	105
64	56	..	...
63	..	..	104
62	..	49	...
61	55	..	103
60	..	..	...
59	..	..	102
58	..	48	...
57	54	..	101
56	..	..	...
55	..	..	100
54	53	47	..
53	..	..	99
52	..	..	..
51	52	..	98
50	..	46	..
49	..	..	..
48	51	..	97
47	..	..	96
46	..	45	..
45	50	..	95
44	..	..	..
43	..	..	94
42	49	44	..
41	..	..	93
40	..	..	..
39	48	43	92
38	..	..	..
37	..	..	91
36	47	42	90
35	..	..	..
34	..	..	89
33	46	41	88
32	..	..	..
31	45	..	87
30	..	40	86
29	..	..	..
28	44	39	85
27	..	..	84
26	43	..	..
25	..	38	83
24	42	..	82
23	..	..	81
22	..	37	..
21	41	..	80
20	..	36	79
19	40	..	78
18	39	35	77
17	..	..	76
16	38	34	75
15	..	..	73-74
14	37	33	72
13	..	32	71
12	36	..	70
11	35	31	68-69
10	34	30	66-67
9	..	29	65
8	33	28	63-64
7	31-32	27	60-62
6	30	25-26	57-59
5	28-29	23-24	54-56
4	27	21-22	51-53
3	24-26	18-20	47-50
2	21-23	15-17	41-46
1	0-20	0-14	0-40

RAW SCORES FOR SELECTED PERCENTILES
of 10, 25, 50, 75, and 90
Based Upon Minnesota State-Wide Norms (Revised, 1965)
for the
LORGE-THORNDIKE INTELLIGENCE TESTS

Males and Females Combined

SEVENTH GRADE Form 1, Level E

Percentile	Verbal	Nonverbal	Total
10	30.0	23.0	56.5
25	38.5	33.1	72.8
50	47.7	43.0	90.6
75	56.2	51.0	105.5
90	63.1	56.7	117.1

EIGHTH GRADE Form 1, Level E

Percentile	Verbal	Nonverbal	Total
10	35.0	26.5	65.0
25	44.7	37.6	83.8
50	54.3	47.3	101.7
75	62.6	55.0	115.9
90	69.8	60.2	127.4

NINTH GRADE Form 1, Level F*

Percentile	Verbal	Nonverbal	Total
10	34.8	30.4	67.7
25	42.8	38.2	83.0
50	51.8	46.1	98.0
75	60.0	52.7	110.9
90	67.1	57.5	121.8

*Since Level F is used only at the Ninth grade, direct raw score comparisons cannot be made with the other two grade levels.

Minnesota State-Wide Norms for

DIFFERENTIAL APTITUDE TESTS, FORM L

(Equated to the 1964 Revision of Minnesota Form A Norms)

MALES — Grade 8

Per-centile	Verbal Reas.	Num. Abil.	Abstract Reas.	RAW SCORE Space Rel.	Mech. Reas.	CS & A	V+ N	Per-centile
100	..	..	..	..	..	..	..	100
99	38-50	32-40	45-50	49-60	59-68	55-100	68-90	99
98	37	..	44	..	57-58	54	65-67	98
97	35-36	31	43	46-48	56	53	63-64	97
96	34	..	42	45	55	52	62	96
95	..	30	..	..	..	51	61	95
94	33	..	..	43-44	54	50	..	94
93	..	29	..	42	..	..	60	93
92	32	..	41	..	..	49	59	92
91	..	28	..	41	53	..	58	91
90	31	..	40	40	..	48	57	90
89	30	..	..	..	..	..	..	89
88	..	..	..	39	52	47	56	88
87	..	..	..	..	..	..	54-55	87
86	29	..	..	..	..	46	..	86
85	..	..	39	38	..	..	..	85
84	28	27	..	37	..	..	..	84
83	..	..	..	..	51	45	53	83
82	..	..	38	36	..	..	..	82
81	27	..	..	..	..	..	..	81
80	..	26	..	..	50	44	52	80
79	..	..	..	35	..	..	51	79
78	26	..	37	..	..	..	50	78
77	..	..	..	..	49	43	..	7
76	25	25	..	34	..	..	..	76
75	..	..	..	..	48	..	..	75
74	..	..	36	..	..	42	49	74
73	..	..	..	33	..	..	..	73
72	24	..	..	..	..	..	48	72
71	..	.	..	..	..	..	..	71
70	..	24	..	32	47	41	47	70
69	..	..	..	..	..	..	..	69
68	..	..	..	31	..	..	..	68
67	23	..	..	..	..	..	46	67
66	..	23	..	30	..	40	..	66
65	..	..	..	..	..	..	45	65
64	..	..	35	..	46	..	..	64
63	..	..	..	29	..	..	44	63
62	22	22	..	..	..	39	..	62
61	..	..	..	..	..	..	43	61
60	..	..	..	..	45	..	..	60
59	..	..	..	28	..	..	..	59
58	..	21	..	..	..	..	..	58
57	21	..	..	..	..	38	..	57
56	..	..	..	27	..	..	42	56
55	..	..	..	..	..	..	41	55
54	..	20	34	..	44	..	..	54
53	..	..	..	..	..	..	40	53
52	20	..	..	26	..	37	39	52
51	..	..	..	..	43	..	..	51

Minnesota State-Wide Norms for
DIFFERENTIAL APTITUDE TESTS, FORM L
(Equated to the 1964 Revision of Minnesota Form A Norms)
(Continued)

MALES — Grade 8

Percentile	Verbal Reas.	Num. Abil.	Abstract Reas.	RAW SCORE Space Rel.	Mech. Reas.	CS & A	V+N	Percentile
50	. .	19	. .	. .	. .	. .	. .	50
49	. .	. .	. .	25	. .	. .	38	49
48	. .	. .	33	. .	. .	36	. .	48
47	18-19	. .	. .	. .	42	. .	. .	47
46	. .	. .	. .	. .	. .	. .	. .	46
45	. .	18	. .	24	. .	. .	37	45
44	. .	. .	32	. .	. .	. .	. .	44
43	. .	. .	. .	. .	. .	35	. .	43
42	. .	. .	. .	. .	. .	. .	36	42
41	17	. .	. .	. .	. .	. .	. .	41
40	. .	17	31	23	41	. .	. .	40
39	. .	. .	. .	. .	. .	. .	. .	39
38	. .	. .	. .	22	40	34	35	38
37	. .	16	. .	. .	. .	. .	. .	37
36	. .	. .	. .	. .	. .	. .	. .	36
35	. .	. .	. .	. .	. .	. .	34	35
34	16	. .	. .	21	. .	. .	. .	34
33	. .	. .	30	. .	. .	. .	. .	33
32	. .	. .	. .	. .	39	33	33	32
31	. .	. .	. .	20	. .	. .	. .	31
30	. .	. .	29	. .	. .	. .	. .	30
29	15	. .	. .	. .	38	. .	32	29
28	. .	15	. .	. .	. .	32	. .	28
27	. .	. .	28	19	. .	. .	. .	27
26	. .	. .	. .	. .	. .	. .	31	26
25	. .	. .	27	. .	37	. .	. .	25
24	14	14	. .	. .	. .	31	. .	24
23	. .	. .	. .	. .	. .	. .	30	23
22	. .	. .	26	18	36	. .	. .	22
21	. .	13	. .	. .	. .	. .	29	21
20	13	. .	25	. .	. .	. .	. .	20
19	. .	. .	24	17	. .	30	. .	19
18	. .	12	23	. .	35	. .	28	18
17	. .	. .	22	. .	. .	. .	. .	17
16	. .	. .	21	. .	. .	29	27	16
15	12	11	20	. .	. .	. .	26	15
14	. .	. .	. .	16	34	. .	25	14
13	. .	. .	19	. .	. .	28	. .	13
12	. .	. .	18	15	. .	. .	24	12
11	11	10	17	. .	. .	27	. .	11
10	. .	. .	. .	. .	. .	. .	23	10
9	. .	. .	16	14	33	26	. .	9
8	. .	9	. .	. .	. .	25	22	8
7	10	. .	15	13	. .	24	. .	7
6	. .	. .	0-14	0-12	32	23	21	6
5	. .	8	. .	. .	31	22	. .	5
4	9	0-7	. .	. .	29-30	21	20	4
3	8	. .	. .	. .	. .	18-20	18-19	3
2	7	. .	. .	. .	27-28	12-17	17	2
1	0-6	. .	. .	. .	0-26	0-11	0-16	1

Minnesota State-Wide Norms for
DIFFERENTIAL APTITUDE TESTS, FORM L
(Equated to the 1964 Revision of Minnesota Form A Norms)

FEMALES — Grade 8

				RAW SCORE				
Percentile	Verbal Reas.	Num. Abil.	Abstract Reas.	Space Rel.	Mech. Reas.	CS & A	V+ N	Percentile
100	..	..	..	..	..	..	..	100
99	37-50	30-40	45-50	47-60	52-68	63-100	64-90	99
98	36	29	43-44	45-46	50-51	61-62	62-63	98
97	..	..	..	44	49	60	61	97
96	35	28	42	..	..	58-59	60	96
95	34	27	..	42-43	48	57	59	95
94	..	..	..	41	..	56	58	94
93	33	..	..	..	47	..	57	93
92	..	26	..	40	46	55	56	92
91	32	..	41	38-39	45	..	55	91
90	..	..	..	37	..	54	54	90
89	31	25	..	36	44	..	..	89
88	..	..	..	35	..	53	..	88
87	30	..	40	..	..	..	53	87
86	29	..	39	34	..	..	..	86
85	..	..	..	33	43	52	52	85
84	28	..	..	..	..	..	51	84
83	..	..	..	32	42	..	..	83
82	27	24	..	..	..	51	50	82
81	..	..	..	..	..	..	..	81
80	..	..	..	31	..	..	49	80
79	..	..	..	..	..	..	48	79
78	26	23	38	30	41	..	47	78
77	..	..	..	..	..	50	46	77
76	..	..	..	..	40	..	45	76
75	25	..	..	29	..	..	..	75
74	..	..	37	..	..	..	..	74
73	..	22	..	..	..	..	44	73
72	..	..	..	..	39	49	..	72
71	..	..	36	28	..	..	..	71
70	24	..	..	..	..	..	..	70
69	..	..	..	..	..	48	..	69
68	..	..	..	27	38	..	43	68
67	..	..	..	..	..	..	..	67
66	23	21	..	26	..	47	..	66
65	..	..	35	..	..	..	42	65
64	..	..	..	..	..	..	..	64
63	22	20	..	..	..	..	..	63
62	..	..	..	..	..	46	41	62
61	..	..	34	25	37	..	..	61
60	21	..	..	..	..	..	..	60
59	..	..	..	..	..	..	40	59
58	..	..	33	..	..	..	..	58
57	..	..	..	24	..	45	..	57
56	19-20	..	..	..	36	..	..	56
55	..	..	..	..	..	..	39	55
54	..	19	32	..	..	..	38	54
53	..	..	..	23	..	..	..	53
52	..	..	..	..	..	44	37	52
51	..	..	..	..	..	..	..	51

Minnesota State-Wide Norms for
DIFFERENTIAL APTITUDE TESTS, FORM L
(Equated to the 1964 Revision of Minnesota Form A Norms)
(Continued)

FEMALES — Grade 8

				RAW SCORE				
Percentile	Verbal Reas.	Num. Abil.	Abstract Reas.	Space Rel.	Mech. Reas.	CS & A	V+ N	Percentile
50	18	..	31	..	35	..	..	50
49	..	..	..	..	..	..	36	49
48	..	18	..	22	..	..	..	48
47	..	..	..	..	..	43	..	47
46	..	..	30	..	..	..	35	46
45	17	..	..	..	34	..	..	45
44	..	..	..	21	..	..	..	44
43	..	17	29	..	..	42	34	43
42	..	..	..	..	..	..	..	42
41	..	..	..	20	..	..	33	41
40	..	..	28	..	33	41	..	40
39	15-16	..	..	..	..	..	..	39
38	..	16	..	19	..	..	32	38
37	..	..	..	..	32	..	..	37
36	..	..	..	..	..	..	..	36
35	..	..	27	..	..	40	..	35
34	..	..	..	..	..	..	31	34
33	14	..	..	18	..	..	..	33
32	..	15	26	..	..	..	..	32
31	..	..	..	..	..	..	30	31
30	..	..	..	..	..	39	..	30
29	..	..	..	17	31	..	..	29
28	13	..	..	..	..	..	29	28
27	..	..	..	..	..	38	..	27
26	..	14	25	..	..	..	..	26
25	..	..	..	..	..	..	..	25
24	..	..	..	..	30	37	..	24
23	..	..	24	16	..	..	28	23
22	12	..	..	..	..	..	..	22
21	..	..	..	..	..	36	..	21
20	..	..	..	..	29	..	27	20
19	..	..	..	..	..	..	..	19
18	11	..	..	15	28	35	26	18
17	..	..	23	..	..	..	..	17
16	..	..	..	..	27	..	..	16
15	..	13	22	..	..	34	25	15
14	..	..	..	14	..	..	..	14
13	10	12	20-21	..	..	33	..	13
12	..	..	19	..	..	..	..	12
11	..	11	18	13	26	32	24	11
10	..	..	17	..	..	..	23	10
9	..	10	13-16	..	..	31	22	9
8	9	..	12	12	..	..	21	8
7	..	..	0-11	..	..	30	20	7
6	..	9	..	..	25	29	19	6
5	8	..	..	11	..	28	18	5
4	..	8	..	..	24	27	..	4
3	7	0-7	..	0-10	23	24-26	17	3
2	6	..	..	..	0-22	16-23	..	2
1	0-5	..	..	..	..	0-15	0-16	1

Minnesota State-Wide Norms for

DIFFERENTIAL APTITUDE TESTS, FORM L

(Equated to the 1964 Revision of Minnesota Form A Norms)

(Continued)

MALES — Grade 9

				RAW SCORE				
Percentile	Verbal Reas.	Num. Abil.	Abstract Reas.	Space Rel.	Mech. Reas.	CS & A	V+ N	Percentile
100	..	..	..	..	..	..	..	100
99	45-50	35-40	47-50	57-60	62-68	58-100	77-90	99
98	43-44	34	46	53-56	60-61	56-57	74-76	98
97	42	..	..	51-52	59	54-55	73	97
96	41	33	45	49-50	..	53	72	96
95	40	..	..	..	58	..	70-71	95
94	39	..	44	48	57	52	69	94
93	..	32	..	..	..	..	68	93
92	38	..	43	47	56	51	..	92
91	37	..	..	..	..	..	67	91
90	36	31	..	46	..	..	..	90
89	..	..	42	45	..	50	66	89
88	35	30	..	44	55	..	65	88
87	..	..	..	43	..	49	64	87
86	34	..	..	42	..	..	63	86
85	..	..	..	..	54	..	62	85
84	..	..	..	..	..	48	61	84
83	33	29	41	41	..	..	..	83
82	..	..	..	40	..	47	60	82
81	..	..	..	..	..	..	..	81
80	32	..	40	..	53	..	59	80
79	..	28	..	39	..	46	58	79
78	..	..	..	..	..	..	..	78
77	31	..	..	..	..	..	57	77
76	..	..	..	38	52	..	..	76
75	30	..	..	..	..	45	56	75
74	..	..	..	37	..	..	..	74
73	..	..	..	..	..	..	55	73
72	29	..	39	36	..	..	54	72
71	..	27	..	..	..	44	..	71
70	..	..	..	35	..	..	..	70
69	..	..	..	..	51	..	..	69
68	28	..	..	..	..	..	..	68
67	..	26	38	..	..	43	53	67
66	..	..	..	..	..	..	..	66
65	27	..	..	34	50	..	52	65
64	..	25	..	..	..	..	..	64
63	..	..	37	33	..	42	51	63
62	26	..	..	..	..	..	..	62
61	..	..	..	..	..	..	..	61
60	..	..	36	..	..	..	50	60
59	..	..	..	32	..	41	..	59
58	25	..	..	..	49	..	..	58
57	..	24	..	..	..	..	49	57
56	..	..	..	31	..	..	..	56
55	..	..	..	..	..	..	48	55
54	24	..	..	..	48	40	..	54
53	..	..	..	..	..	..	47	53
52	..	23	..	30	..	..	..	52
51	..	..	35	..	..	..	46	51

Minnesota State-Wide Norms for

DIFFERENTIAL APTITUDE TESTS, FORM L

(Equated to the 1964 Revision of Minnesota Form A Norms)

(Continued)

MALES — Grade 9

				RAW SCORE				
Percentile	Verbal Reas.	Num. Abil.	Abstract Reas.	Space Rel.	Mech. Reas.	CS & A	V+ N	Percentile
50	. .	. .	. .	29	. .	. .	. .	50
49	23	. .	. .	. .	. .	39	45	49
48	. .	22	. .	. .	47	. .	. .	48
47	. .	. .	. .	. .	. .	. .	44	47
46	. .	. .	. .	28	. .	. .	. .	46
45	. .	21	. .	. .	. .	38	43	45
44	22	. .	. .	. .	. .	. .	. .	44
43	. .	. .	34	27	. .	. .	. .	43
42	. .	. .	. .	. .	. .	. .	. .	42
41	. .	20	. .	. .	46	37	42	41
40	21	. .	. .	26	. .	. .	. .	40
39	. .	. .	. .	. .	. .	. .	. .	39
38	. .	19	. .	. .	45	. .	41	38
37	. .	. .	33	25	. .	36	. .	37
36	20	. .	. .	. .	. .	. .	40	36
35	. .	. .	. .	. .	. .	. .	. .	35
34	. .	18	32	. .	. .	. .	39	34
33	. .	. .	. .	. .	. .	. .	. .	33
32	18-19	. .	. .	24	. .	35	38	32
31	. .	17	31	. .	44	. .	. .	31
30	. .	. .	. .	. .	. .	. .	37	30
29	. .	. .	. .	23	. .	. .	. .	29
28	17	16	. .	. .	43	. .	36	28
27	. .	. .	. .	. .	. .	34	. .	27
26	. .	. .	. .	22	. .	. .	35	26
25	. .	. .	30	. .	. .	. .	. .	25
24	16	. .	. .	. .	42	. .	34	24
23	. .	. .	29	21	. .	33	. .	23
22	. .	15	. .	. .	. .	. .	33	22
21	. .	. .	28	. .	. .	. .	. .	21
20	15	. .	. .	20	41	. .	32	20
19	. .	14	27	. .	40	32	. .	19
18	. .	. .	26	19	. .	. .	31	18
17	. .	. .	. .	. .	. .	. .	. .	17
16	14	13	. .	. .	. .	31	30	16
15	. .	. .	25	18	39	. .	29	15
14	. .	12	24	. .	. .	. .	. .	14
13	13	. .	22-23	. .	. .	30	28	13
12	. .	. .	21	17	38	. .	27	12
11	. .	11	20	. .	37	29	. .	11
10	12	. .	19	16	36	. .	26	10
9	. .	10	17-18	. .	. .	28	25	9
8	11	. .	16	15	35	. .	. .	8
7	. .	. .	. .	. .	34	27	24	7
6	10	9	14-15	. .	. .	26	23	6
5	. .	8	. .	14	33	24-25	21-22	5
4	9	7	. .	13	32	22-23	20	4
3	8	. .	0-13	12	31	18-21	19	3
2	7	0-6	. .	. .	29-30	9-17	17-18	2
1	0-6	. .	. .	0-11	0-28	0-8	0-16	1

Minnesota State-Wide Norms for
DIFFERENTIAL APTITUDE TESTS, FORM L
(Equated to the 1964 Revision of Minnesota Form A Norms)
(Continued)

FEMALES — Grade 9

				RAW SCORE				
Per-centile	**Verbal Reas.**	**Num. Abil.**	**Abstract Reas.**	**Space Rel.**	**Mech. Reas.**	**CS & A**	**V+ N**	**Per-centile**
100	..	..	..	..	..	..	..	100
99	44-50	36-40	47-50	54-60	54-68	67-100	78-90	99
98	42-[illegible]	35	46	52-53	53	65-66	75-77	98
97	41	34	..	50-51	52	63-64	73-74	97
96	..	33	45	49	..	62	72	96
95	40	..	..	48	51	61	70-71	95
94	39	32	44	47	50	60	69	94
93	..	..	43	46	..	..	68	93
92	38	31	..	45	49	59	67	92
91	37	..	..	..	..	58	66	91
90	..	30	42	44	48	..	65	90
89	36	..	..	43	..	57	64	89
88	35	29	..	42	..	..	63	88
87	..	..	..	..	47	56	62	87
86	..	..	..	41	..	..	61	86
85	34	..	..	40	..	55	..	85
84	..	..	..	..	46	..	60	84
83	33	..	41	..	..	..	..	83
82	..	28	..	39	..	54	59	82
81	32	..	..	38	45	..	..	81
80	..	..	40	37	..	..	58	80
79	..	..	..	36	44	53	57	79
78	31	27	..	..	..	..	..	78
77	..	..	..	..	..	..	..	77
76	..	..	39	..	..	..	56	76
75	30	26	..	35	..	52	..	75
74	..	..	..	34	..	..	55	74
73	..	..	..	..	43	..	..	73
72	..	..	..	33	..	..	54	72
71	29	..	..	..	42	..	..	71
70	..	..	..	32	..	51	..	70
69	..	25	..	..	..	..	53	69
68	28	..	..	..	..	..	..	68
67	..	..	..	..	..	..	52	67
66	..	..	38	31	..	..	..	66
65	..	..	..	..	..	50	..	65
64	27	..	..	..	..	..	51	64
63	..	..	..	30	41	..	..	63
62	..	..	..	..	..	..	..	62
61	..	24	37	29	..	..	50	61
60	26	..	..	..	..	49	..	60
59	..	..	..	..	40	..	49	59
58	..	..	..	..	..	..	..	58
57	..	23	36	..	..	..	..	57
56	..	..	..	28	39	48	48	56
55	25	..	..	..	..	..	..	55
54	..	..	..	..	..	..	47	54
53	..	..	..	27	..	..	..	53
52	..	22	..	..	..	47	..	52
51	24	..	..	26	38	..	46	51

Minnesota State-Wide Norms for

DIFFERENTIAL APTITUDE TESTS, FORM L

(Equated to the 1964 Revision of Minnesota Form A Norms)

(Continued)

FEMALES — Grade 9

				RAW SCORE				
Per-centile	Verbal Reas.	Num. Abil.	Abstract Reas.	Space Rel.	Mech. Reas.	CS & A	V+ N	Per-centile
50	..	..	..	..	..	..	..	50
49	..	..	..	..	..	46	45	49
48	..	..	35	..	..	..	..	48
47	23	..	..	25	..	..	44	47
46	..	..	..	..	..	..	..	46
45	..	..	..	..	37	..	..	45
44	..	21	34	24	..	45	..	44
43	22	..	..	..	..	..	..	43
42	..	..	..	..	..	..	43	42
41	..	20	..	..	36	..	..	41
40	..	..	33	..	..	44	42	40
39	21	..	..	23	..	..	..	39
38	..	..	..	..	..	..	41	38
37	..	..	32	..	..	..	..	37
36	..	..	..	22	..	..	..	36
35	19-20	..	..	..	..	43	40	35
34	..	..	31	..	35	..	..	34
33	..	..	..	21	..	..	39	33
32	18	..	..	..	..	..	38	32
31	..	19	30	..	34	42	..	31
30	..	..	..	20	..	..	37	30
29	..	..	29	..	..	..	..	29
28	17	..	..	..	..	41	36	28
27	..	18	..	19	..	..	35	27
26	..	..	28	..	..	..	..	26
25	..	..	..	..	33	..	..	25
24	..	17	..	..	..	40	34	24
23	15-16	..	..	..	..	..	..	23
22	..	16	27	18	32	..	33	22
21	..	..	..	..	..	39	..	21
20	14	..	26	17	..	..	32	20
19	..	15	..	..	..	..	31	19
18	..	..	..	..	..	38	..	18
17	..	..	..	..	31	..	30	17
16	13	14	25	16	..	..	..	16
15	..	..	24	..	..	37	29	15
14	..	..	..	..	30	..	..	14
13	12	..	22-23	15	..	36	28	13
12	..	..	..	..	..	..	27	12
11	..	..	21	..	29	35	..	11
10	..	13	20	14	..	..	26	10
9	11	12	19	..	28	34	25	9
8	..	..	17-18	..	27	..	..	8
7	10	11	16	13	..	33	..	7
6	..	..	14-15	12	26	32	24	6
5	9	10	12-13	..	..	31	22-23	5
4	8	9	11	11	25	30	21	4
3	7	8	..	10	24	27-29	19-20	3
2	6	7	0-10	0-9	23	21-26	17-18	2
1	0-5	0-6	..	..	0-22	0-20	0-16	1

Minnesota State-Wide Norms for

DIFFERENTIAL APTITUDE TESTS, FORM L

(Equated to the 1964 Revision of Minnesota Form A Norms)

(Continued)

MALES — Grade 10

				RAW SCORE				
Percentile	Verbal Reas.	Num. Abil.	Abstract Reas.	Space Rel.	Mech. Reas.	CS & A	V+ N	Percentile
100	..	..	..	..	..	..	..	100
99	46-50	37-40	47-50	59-60	64-68	63-100	82-90	99
98	45	36	..	57-58	62-63	61-62	80-81	98
97	43-44	..	..	55-56	61	59-60	78-79	97
96	42	35	46	52-54	60	58	77	96
95	..	..	..	51	..	57	76	95
94	..	34	45	50	59	56	74-75	94
93	41	..	..	49	58	55	73	93
92	40	..	44	48	57	..	72	92
91	..	33	..	..	..	54	71	91
90	39	..	..	..	56	..	70	90
89	..	..	43	..	..	53	..	89
88	38	..	..	47	..	..	..	88
87	..	..	..	46	..	52	69	87
86	..	..	..	..	..	..	68	86
85	37	32	42	45	55	..	..	85
84	..	..	..	43-44	..	51	..	84
83	36	..	..	42	..	..	..	83
82	..	..	..	..	..	..	67	82
81	35	31	..	41	54	..	66	81
80	..	..	..	40	..	50	65	80
79	..	..	..	..	..	..	..	79
78	34	..	..	39	..	..	64	78
77	..	30	..	..	53	..	..	77
76	..	..	41	..	..	49	63	76
75	..	..	..	..	..	..	62	75
74	33	..	..	38	52	48	..	74
73	..	..	40	..	..	..	61	73
72	..	..	..	..	..	..	..	72
71	32	29	..	..	..	47	60	71
70	..	..	..	..	..	..	..	70
69	31	..	..	37	..	..	59	69
68	..	28	..	..	..	46	..	68
67	30	..	..	36	..	..	..	67
66	..	..	39	..	51	..	58	66
65	..	..	..	..	..	..	57	65
64	29	..	..	35	..	45	..	64
63	..	..	..	..	..	..	56	63
62	..	..	..	..	..	..	55	62
61	..	27	..	..	50	..	..	61
60	..	..	38	34	..	..	54	60
59	28	..	..	..	..	44	..	59
58	..	..	..	..	..	..	..	58
57	..	26	..	33	49	..	53	57
56	..	..	..	..	..	..	..	56
55	27	..	37	..	..	..	52	55
54	..	25	..	..	..	43	..	54
53	..	..	..	32	48	..	51	53
52	26	..	..	..	..	..	..	52
51	..	..	36	31	..	..	50	51

Minnesota State-Wide Norms for

DIFFERENTIAL APTITUDE TESTS, FORM L

(Equated to the 1964 Revision of Minnesota Form A Norms)

(Continued)

MALES — Grade 10

				RAW SCORE				
Percentile	Verbal Reas.	Num. Abil.	Abstract Reas.	Space Rel.	Mech. Reas.	CS & A	V+ N	Percentile
50	..	..	..	..	..	42	..	50
49	..	..	..	..	..	..	..	49
48	25	..	..	30	..	..	..	48
47	..	..	..	..	47	..	49	47
46	..	24	..	..	..	41	48	46
45	24	..	..	29	..	..	..	45
44	..	..	..	..	..	..	47	44
43	..	..	..	..	..	..	..	43
42	..	23	35	..	..	40	46	42
41	23	..	..	28	..	..	..	41
40	..	22	..	..	46	..	..	40
39	..	..	..	..	..	..	45	39
38	..	..	..	..	..	39	..	38
37	22	..	..	27	..	..	44	37
36	..	..	..	..	45	..	..	36
35	..	20	..	..	..	..	43	35
34	..	..	..	..	..	38	..	34
33	21	..	34	26	..	..	..	33
32	..	..	..	..	..	..	..	32
31	..	19	..	..	..	..	..	31
30	..	..	..	25	..	37	42	30
29	20	..	..	..	44	..	41	29
28	..	..	..	24	..	..	..	28
27	..	18	..	..	..	..	40	27
26	18-19	..	33	..	43	36	39	26
25	..	..	..	23	..	..	..	25
24	..	17	..	..	..	..	38	24
23	..	..	32	..	..	..	..	23
22	17	..	..	22	..	35	..	22
21	..	16	31	..	42	..	37	21
20	..	..	..	..	..	..	36	20
19	..	..	..	21	..	34	..	19
18	16	..	30	..	..	..	35	18
17	..	..	..	20	..	..	34	17
16	..	..	29	..	41	..	..	16
15	..	..	28	19	..	33	33	15
14	15	15	..	..	40	..	32	14
13	..	..	26-27	..	..	32	..	13
12	..	..	..	18	..	..	31	12
11	14	..	..	..	..	31	..	11
10	13	14	25	17	39	..	30	10
9	..	..	24	..	38	30	..	9
8	12	13	22-23	15-16	37	..	29	8
7	..	12	21	..	36	29	28	7
6	..	11	20	14	..	28	27	6
5	11	10	18-19	13	35	27	26	5
4	10	9	0-17	0-12	..	26	24-25	4
3	9	..	..	..	34	23-25	22-23	3
2	8	0-8	..	..	31-33	13-22	20-21	2
1	0-7	..	..	..	0-30	0-12	0-19	1

Minnesota State-Wide Norms for

DIFFERENTIAL APTITUDE TESTS, FORM L

(Equated to the 1964 Revision of Minnesota Form A Norms)

(Continued)

FEMALES — Grade 10

				RAW SCORE				
Per-centile	Verbal Reas.	Num. Abil.	Abstract Reas.	Space Rel.	Mech. Reas.	CS & A	V+ N	Per-centile
100	..	..	..	..	..	..	..	100
99	46-50	36-40	47-50	53-60	56-68	72-100	80-90	99
98	45	35	..	51-52	54-55	68-71	78-79	98
97	44	34	46	50	53	67	77	97
96	43	..	..	..	..	66	76	96
95	42	33	..	49	52	65	73-75	95
94	41	..	45	48	..	64	71-72	94
93	..	32	..	46-47	..	63	70	93
92	40	..	44	45	51	..	69	92
91	39	..	..	44	..	62	68	91
90	38	31	..	42-43	50	..	66-67	90
89	37	..	..	..	..	61	65	89
88	36	..	43	40-41	49	..	64	88
87	..	30	..	..	..	60	63	87
86	35	..	..	39	48	..	62	86
85	..	29	42	38	..	59	61	85
84	34	..	..	..	..	..	..	84
83	..	..	..	37	..	58	60	83
82	33	..	..	36	..	..	..	82
81	..	28	..	..	..	..	..	81
80	32	..	..	35	47	57	..	80
79	..	..	..	..	46	..	59	79
78	..	..	41	34	..	..	58	78
77	31	27	..	..	..	56	..	77
76	..	..	..	33	45	..	57	76
75	..	..	40	..	..	..	56	75
74	30	..	..	32	..	55	55	74
73	..	26	..	..	..	..	..	73
72	..	..	..	..	44	..	54	72
71	..	..	39	..	..	54	..	71
70	29	..	..	31	..	..	..	70
69	..	25	..	..	..	..	..	69
68	..	..	..	..	..	..	53	68
67	..	..	..	30	..	53	..	67
66	28	..	..	..	43	..	..	66
65	..	..	..	..	..	..	..	65
64	..	..	..	..	42	..	..	64
63	..	..	..	29	..	..	52	63
62	27	..	38	..	..	..	..	62
61	..	..	..	..	..	52	..	61
60	..	24	..	28	..	..	51	60
59	..	..	..	..	..	..	..	59
58	..	..	37	27	41	..	50	58
57	26	..	..	..	..	..	..	57
56	..	..	..	..	40	..	49	56
55	..	23	36	26	..	51	48	55
54	..	..	..	..	..	..	..	54
53	25	..	..	..	..	..	47	53
52	..	..	..	..	..	..	..	52
51	..	..	..	..	39	..	46	51

Minnesota State-Wide Norms for
DIFFERENTIAL APTITUDE TESTS, FORM L
(Equated to the 1964 Revision of Minnesota Form A Norms)
(Continued)

FEMALES — Grade 10

				RAW SCORE				
Per-centile	Verbal Reas.	Num. Abil.	Abstract Reas.	Space Rel.	Mech. Reas.	CS & A	V+ N	Per-centile
50	24	22	..	25	..	..	..	50
49	..	..	..	..	..	50	45	49
48	..	..	..	..	..	..	..	48
47	..	..	35	..	..	..	44	47
46	23	..	..	24	..	..	..	46
45	..	..	34	..	38	..	..	45
44	..	..	..	..	..	49	..	44
43	..	..	..	..	..	..	..	43
42	22	21	33	..	..	..	43	42
41	..	..	..	..	..	48	..	41
40	..	..	..	23	..	..	..	40
39	21	..	..	..	37	..	42	39
38	..	20	32	..	..	47	..	38
37	..	..	..	22	..	..	..	37
36	..	..	..	..	..	..	41	36
35	19-20	..	..	..	36	46	..	35
34	..	..	31	21	..	..	..	34
33	..	..	..	..	..	..	40	33
32	..	..	..	..	..	..	..	32
31	..	..	30	..	..	45	39	31
30	..	..	..	..	35	..	..	30
29	18	..	29	20	..	..	38	29
28	..	19	..	..	..	..	..	28
27	..	..	..	..	34	44	37	27
26	..	..	28	..	..	..	36	26
25	17	..	..	19	..	..	..	25
24	..	18	..	..	..	..	35	24
23	..	..	..	18	..	43	..	23
22	15-16	..	27	..	33	..	..	22
21	..	17	..	..	..	..	34	21
20	..	16	..	17	..	42	..	20
19	..	..	26	..	32	..	..	19
18	14	..	25	..	..	41	33	18
17	..	15	24	..	..	..	..	17
16	..	..	23	..	31	40	32	16
15	13	..	..	..	..	..	..	15
14	..	14	22	16	..	..	31	14
13	12	..	..	..	..	39	30	13
12	..	13	..	..	30	..	29	12
11	..	..	20-21	..	..	38	..	11
10	11	12	19	..	..	37	28	10
9	..	..	..	15	..	..	27	9
8	..	..	17-18	..	..	36	26	8
7	10	..	15-16	..	29	35	25	7
6	..	11	13-14	14	..	34	..	6
5	9	..	0-12	13	28	33	24	5
4	..	10	..	12	..	32	21-23	4
3	8	9	..	11	27	30-31	19-20	3
2	7	0-8	..	0-10	26	27-29	18	2
1	0-6	..	..	..	0-25	0-26	0-17	1

Raw Scores for Selected Percentiles for
DIFFERENTIAL APTITUDE TESTS, FORM L
(Equated to the 1964 Revision of Minnesota Form A Norms)

Per-centile	Verbal Reas.	Num. Abil.	Abstract Reas.	Space Rel.	Mech. Reas.	CS & A	V & N	Per-centile
	GRADE 8 MALES—RAW SCORES							
10	10.8	9.7	16.5	14.3	33.2	26.5	23.0	10
25	14.2	14.3	27.0	18.6	37.0	31.3	30.7	25
50	19.6	19.0	33.3	25.3	42.8	36.5	38.3	50
75	24.8	[illegible]	36.3	33.7	48.0	42.3	49.3	75
90	31.0	27.9	40.0	40.0	52.7	48.0	57.0	90
	GRADE 8 FEMALES—RAW SCORES							
10	9.4	10.5	17.0	12.7	25.8	31.5	23.0	10
25	12.5	13.9	24.7	16.3	30.2	37.3	28.4	25
50	18.0	18.3	31.0	22.4	35.0	43.6	36.3	50
75	25.0	22.4	37.3	29.0	39.8	49.6	44.7	75
90	31.5	25.3	40.8	37.0	44.5	54.0	54.0	90
	GRADE 9 MALES—RAW SCORES							
10	12.0	10.5	19.0	16.0	36.0	28.5	26.0	10
25	16.3	15.5	30.0	21.7	42.3	33.5	34.5	25
50	23.2	22.5	34.9	29.0	47.3	39.2	45.5	50
75	30.0	27.5	39.4	37.5	51.9	45.0	56.0	75
90	36.0	31.0	42.3	46.0	55.5	50.3	66.5	90
	GRADE 9 FEMALES—RAW SCORES							
10	11.3	13.0	20.0	14.0	28.5	34.5	26.0	10
25	16.4	17.3	27.8	18.6	33.0	40.3	34.3	25
50	23.8	21.8	35.2	25.8	37.8	46.3	45.5	50
75	30.0	26.0	38.9	35.0	43.3	52.0	55.5	75
90	36.5	30.0	42.0	44.0	48.0	57.5	65.0	90
	GRADE 10 MALES—RAW SCORES							
10	13.0	14.0	25.0	17.0	39.0	30.5	30.0	10
25	18.3	17.3	32.7	23.0	42.8	35.8	38.5	25
50	25.5	24.5	35.9	30.7	47.5	42.0	49.8	50
75	33.3	29.7	40.7	38.3	52.3	48.5	62.0	75
90	39.0	32.8	43.3	47.5	56.0	53.5	70.0	90
	GRADE 10 FEMALES—RAW SCORES							
10	11.0	12.0	19.0	15.2	29.6	37.0	28.0	10
25	17.0	18.3	27.8	19.0	33.6	43.5	35.5	25
50	24.0	22.0	35.4	25.0	38.8	50.2	45.5	50
75	30.3	26.5	40.0	32.5	44.8	55.3	56.0	75
90	38.0	31.0	43.5	42.5	50.0	61.5	66.5	90

Minnesota State-Wide Norms
for
IOWA TESTS OF BASIC SKILLS

Males and Females Combined

1969

The Minnesota norms for ITBS are based upon scores of students who took the battery in Fall, 1969.

	N (Schools)	N (Students)
Grade 7	34	3,432
Grade 7	24	1,690

Not all schools which administered ITBS in Fall of 1969 are included. A few were eliminated so that the final norm group represents a good cross-section of the State in terms of school size and geographical location.

Additional adjustments were made so that the distribution of Minnesota Scholastic Aptitude Test (MSAT) scores in the schools making up the norm group closely approximate the distribution of MSAT scores for the entire Minnesota population.

Minnesota State-Wide Norms for
IOWA TESTS OF BASIC SKILLS
Grade 7
GRADE EQUIVALENT

Per-centile	Voc.	RDG	Language					Work Study Skills				Arithmetic Skills			Comp.	Per-centile
			Spel.	Cap.	Punc.	Usǵ.	Tot.	Maps	Graphs	Ref.	Tot.	Con.	Prob.	Tot.		
99	98-109	98-113	100-109	103-111	99-106	97-106	97-101	99-108	103-110	100-106	97-105	98-108	93-103	93-105	93-101	99
98	96-97	95-97	99	102	98	96	95-96	97-98	100-102	98-99	95-96	96-97	91-92	91-92	92	98
97	94-95	92-94	97-98	..	97	95	94	96	99	95-97	93-94	94-95	90	89-90	90-91	97
96	93	90-91	95-96	100-101	96	..	93	94-95	98	94	92	92-93	88-89	88	89	96
95	91-92	..	93-94	..	..	93-94	92	92-93	..	93	91	91	86-87	87	88	95
94	90	89	92	98-99	95	..	91	..	96-97	92	90	90	85	86	87	94
93	89	87-88	..	..	94	91-92	90	90-91	..	91	89	88-89	..	85	86	93
92	88	..	90-91	96-97	93	..	89	..	93-95	..	..	87	83-84	84	85	92
91	87	86	..	..	..	90	88	87-89	92	89-90	88	..	..	[illegible]	84	91
90	85-86	85	89	94-95	92	..	..	..	..	..	87	86	81-82	82	..	90
89	84	..	87-88	..	..	88-89	87	..	91	88	..	84-85	..	81	83	89
88	83	84	86	92-93	91	..	86	85-86	..	87	86	..	..	..	82	88
87	82	..	..	..	90	87	..	..	89-90	..	85	83	78-80	80	..	87
86	..	82-83	85	91	..	..	85	83-84	..	86	..	..	..	..	81	86
85	81	81	..	..	89	..	..	..	88	..	84	82	..	79	..	85
84	..	..	..	90	88	85-86	84	..	..	..	..	..	..	78	80	84
83	80	80	83-84	..	87	..	83	..	..	85	83	..	..	..	..	83
82	..	..	..	89	..	..	..	81-82	..	..	82	81	75-77	77	79	82
81	79	79	..	..	85-86	83-84	82	..	85-87	84	..	..	..	..	..	81
80	..	78	81-82	88	..	..	..	..	..	83	81	80	..	..	78	80
79	..	..	..	..	..	..	81	..	..	..	..	79	..	76	..	79
78	77-78	77	..	87	..	..	80	79-80	..	82	..	..	73-74	..	77	78
77	..	..	79-80	..	83-84	..	..	..	..	..	80	78	..	75	..	77
76	..	76	..	85-86	..	81-82	79	..	82-84	81	..	..	..	..	76	76
75	76		..	..	81-82	..	..	..	..	..	79	..	..	74	..	75

74	..	75	77-78	84	..	..	78	..	..	..	..	77	..	..	75	74
73	..	..	..	.	80	..	..	77-78	..	80	78	..	71-72	73	..	73
72	75	74	..	82-83	..	..	77	..	..	..	..	..	..	..	74	72
71	..	..	76	..	..	..	..	..	..	79	77	75-76	..	..	..	71
70	74	73	..	81	78-79	77-80	76	..	79-81	78	..	..	..	72	73	70
69	..	..	..	..	..	..	..	76	..	..	76	..	..	..	..	69
68	..	..	74-75	..	..	..	75	..	..	77	..	74	..	71	..	68
67	73	72	..	79-80	..	..	..	..	..	..	..	..	69-70	..	72	67
66	..	..	..	..	76-77	..	74	..	..	..	75	..	..	70	..	66
65	72	71	73	..	..	..	..	..	..	75-76	..	73	..	..	71	65
64	..	..	..	76-78	..	74-76	73	74-75	75-78	..	74	..	..	69	..	64
63	..	70	..	..	..	..	..	..	..	74	..	..	67-68	..	..	63
62	71	..	71	75	73-75	..	..	..	..	..	73	..	..	..	70	62
61	..	69	..	..	..	..	72	..	..	73	..	71-72	..	68	..	61
60	70	..	..	73-74	..	..	..	..	.	..	72	..	..	..	..	60
59	..	..	70	..	..	..	71	72-73	..	..	..	..	66	67	69	59
58	69	68	..	..	71-72	71-73	..	..	..	72	..	70	..	..	..	58
57	..	..	69	72	..	..	70	..	72-74	..	71	..	..	66	68	57
56	..	..	..	..	..	..	69	..	..	71	..	..	..	..	..	56
55	..	67	68	70-71	..	..	..	..	..	..	70	..	64	..	..	55
54	68	..	..	..	..	68-70	68	70-71	..	70	..	68-69	..	65	67	54
53	..	66	67	69	69-70	..	..	..	..	..	69	..	..	..	..	53
52	..	..	66	..	..	..	67	..	..	69	..	..	..	64	66	52
51	..	..	..	..	..	67	..	..	69-71	..	..	67	62-63	..	..	51
50	67	65	..	..	..	..	66	..	..	68	68	..	..	..	..	50
49	..	..	65	67-68	66-68	..	..	68-69	..	..	..	66	..	63	65	49
48	..	..	..	..	..	..	65	..	..	67	67	..	..	..	..	48
47	66	64	..	..	..	64-66	..	..	..	..	..	65	61	62	..	47
46	..	..	63-64	65-66	..	..	64	..	..	66	..	..	..	..	64	46
45	65	63	..	..	..	..	..	66-67	..	..	66	64	..	..	..	45

Minnesota State-Wide Norms for
IOWA TESTS OF BASIC SKILLS

(Continued)

Grade 7

GRADE EQUIVALENT

Per-			Language					Work Study Skills				Arithmetic Skills				Per-
centile	Voc.	RDG	Spel.	Cap.	Punc.	Usg.	Tot.	Maps	Graphs	Ref.	Tot.	Con.	Prob.	Tot.	Comp.	centile
44	. .	. .	. .	34	64-65	. .	63	. .	. .	. .	. .	. .	. .	61	. .	44
43	. .	62	61-62	. .	. .	. .	. .	. .	66-68	65	. .	63	. .	. .	63	43
42	. .	. .	. .	62-63	. .	61-63	62	65	. .	. .	65	. .	. .	60	. .	42
41	64	61	. .	. .	. .	. .	61	. .	. .	64	. .	62	. .	. .	62	41
40	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	64	. .	58-60	. .	. .	40
39	. .	60	59-60	. .	61-63	. .	60	. .	. .	63	63	. .	. .	59	. .	39
38	. .	. .	. .	59-61	. .	. .	. .	63-64	. .	. .	. .	61	. .	. .	61	38
37	62-63	. .	. .	. .	. .	58-60	59	. .	. .	62	62	. .	. .	58	. .	37
36	. .	59	. .	. .	58-60	. .	58	. .	63-65	. .	. .	. .	. .	. .	60	36
35	61	. .	57-58	57-58	. .	. .	. .	60-62	. .	. .	61	59-60	. .	. .	. .	35
34	. .	58	. .	. .	. .	. .	57	. .	. .	61	. .	. .	. .	57	59	34
33	60	57	. .	56	. .	54-57	. .	. .	. .	. .	60	. .	. .	. .	. .	33
32	. .	. .	55-56	55	55-57	. .	56	59	. .	. .	. .	. .	54-57	56	58	32
31	. .	56	. .	. .	. .	. .	. .	. .	. .	59-60	. .	. .	. .	. .	. .	31
30	59	. .	. .	54	. .	. .	55	. .	. .	. .	59	57-58	. .	. .	. .	30
29	. .	55	. .	53	. .	52-53	54	. .	60-62	. .	58	. .	. .	55	57	29
28	. .	54	52-54	. .	52-54	. .	. .	57-58	. .	57-58	. .	. .	. .	. .	. .	28
27	. .	. .	. .	. .	. .	. .	53	. .	. .	. .	57	55-56	. .	54	56	27
26	. .	53	. .	51-52	. .	. .	52	. .	. .	56	. .	. .	. .	. .	. .	26
25	57-58	. .	50-51	. .	. .	49-51	. .	. .	56-59	. .	56	. .	. .	53	55	25
24	. .	52	. .	. .	48-51	. .	51	. .	. .	. .	. .	. .	50-53	. .	. .	24
23	. .	. .	. .	49-50	. .	. .	50	54-56	. .	54-55	55	53-55	. .	. .	54	23
22	. .	51	48-49	. .	. .	47-48	49	. .	. .	. .	54	. .	. .	52	. .	22
21	55-56	. .	47	. .	. .	46	. .	53	54-55	52-53	. .	. .	. .	. .	53	21
20	. .	50	. .	48	45-47	. .	48	. .	. .	. .	53	. .	. .	51	. .	20

19	..	..	46	..	..	..	47	..	52-53	50-51	..	51-52	..	..	52	19
18	53-54	49	45	47	..	44-45	..	51-52	..	..	52	..	..	50	..	18
17	..	48	44	46	..	..	46	..	..	48-49	51	..	45-49	..	51	17
16	..	..	..	45	42-44	42-43	45	49-50	..	..	..	..	..	49	..	16
15	51-52	47	43	44	..	41	..	..	..	47	50	..	..	48	50	15
14	..	46	42	..	39-41	..	44	48	48-51	..	..	48-50	..	..	..	14
13	49-50	45	..	42-43	..	38-40	43	..	..	45-46	49	..	..	47	49	13
12	48	44	41	..	38	37	42	..	..	44	48	..	..	..	..	12
11	..	..	40	40-41	..	..	41	45-47	..	43	47	46-47	41-44	46	48	11
10	46-47	43	38-39	39	35-37	34-36	40	..	..	41-42	..	45	..	45	47	10
9	44-45	..	37	37-38	..	..	39	44	43-47	40	46	..	..	..	46	9
8	43	42	35-36	36	31-34	..	38	41-43	..	..	45	44	..	43-44	45	8
7	41-42	41	..	34-35	..	31-33	36-37	..	..	38-39	44	..	36-40	..	44	7
6	39-40	39-40	34	33	..	..	35	39-40	38-42	36-37	43	42-43	..	42	43	6
5	37-38	37-38	30-33	31-32	28-30	28-30	34	37-38	..	..	42	41	..	41	42	5
4	35-36	35-36	29	28-30	25-27	..	32-33	34-36	33-37	33-35	40-41	39-40	33-35	39-40	41	4
3	32-34	33-34	25-28	25-27	22-24	26-27	30-31	31-33	..	32	38-39	36-38	32	37-38	39-40	3
2	28-31	30-32	22-24	23-24	20-21	24-25	28-29	30	29-32	30-31	35-37	34-35	30-31	35-36	36-38	2
1	22-27	18-29	15-21	15-22	15-19	18-23	17-27	20-29	22-28	23-29	22-34	22-33	21-29	24-34	21-35	1

Minnesota State-Wide Norms for
IOWA TESTS OF BASIC SKILLS
(Continued)

Grade 8

GRADE EQUIVALENT

Per-centile	Work Study Skills Graphs	Work Study Skills Refer.	Work Study Skills Total	Arithmetic Skills Concepts	Arithmetic Skills Problems	Arithmetic Skills Total	Composite	Per centile
99	116-119	111-117	109-115	110-117	102-113	103-112	103-113	99
98	..	108-110	107-108	107-109	100-101	102	102	98
97	113-115	106-107	105-106	..	98-99	100-101	100-101	97
96	..	..	104	106	..	99	99	96
95	109-112	104-105	103	104-105	96-97	98	98	95
94	..	..	102	103	95	..	97	94
93	..	102-103	..	102	..	97	96	93
92	104-108	..	101	101	93-94	96	..	92
91	..	100-101	100	..	92	95	95	91
90	..	..	..	100	..	94	..	90
89	..	..	99	..	90-91	93	94	89
88	..	98-99	98	98-99	..	92	..	88
87	100-103	..	..	..	89	..	93	87
86	..	97	97	96-97	..	91	92	86
85	..	..	96	..	88	90	91	85
84	97-99	..	..	95	..	..	..	84
83	..	95-96	95	..	86-87	89	90	83
82	..	..	94	93-94	..	..	..	82
81	95-96	..	..	..	..	88	89	81
80	..	..	93	..	85	..	..	80

79	**94**	94	..	91-92	..	87	88	79
78	..	..	92	..	..	..	..	78
77	..	..	..	..	..	86	87	77
76	..	92-93	91	90	83-84	..	..	76
75	..	..	..	89	..	85	86	75
74	..	..	90	..	..	..	..	74
73	91-93	91	..	88	..	84	85	73
72	..	..	89	..	..	..	..	72
71	..	..	..	87	..	83	84	71
70	..	89-90	88	..	80-82	..	..	70
69	..	..	..	86	..	82	83	69
68	..	88	87	..	..	..	..	68
67	..	..	..	..	..	..	..	67
66	..	..	..	85	..	81	82	66
65	87-90	86-87	86	..	..	..	..	65
64	..	..	..	84	..	80	81	64
63	..	..	85	83	..	..	..	63
62	..	85	..	..	78-79	..	..	62
61	..	..	84	82	..	79	80	61
60	84-86	83-84	..	..	..	..	..	60
59	..	..	83	81	..	78	79	59
58	..	..	..	..	..	..	..	58
57	83	82	82	80	76-77	77	78	57
56	..	..	..	79	..	..	..	56
55	..	81	81	..	..	76	..	55
54	..	80	..	..	75	..	77	54
53	81-82	..	..	77-78	..	75	..	53
52	..	79	80	..	..	..	76	52
51	..	..	..	..	..	74	..	51
50	79-80	..	79	..	73-74	..	..	50

Minnesota State-Wide Norms for
IOWA TESTS OF BASIC SKILLS
(Continued)

Grade 8

GRADE EQUIVALENT

Per-centile	Work Study Skills			Arithmetic Skills			Composite	Per centile
	Graphs	Refer.	Total	Concepts	Problems	Total		
49	..	78	..	75-76	..	73	75	49
48	..	..	78	..	..	..	..	48
47	..	77	..	..	..	..	74	47
46	77-78	..	77	73-74	..	72	..	46
45	[illegible]	76	..	..	72	..	73	45
44	..	..	..	72	..	71	..	44
43	..	75	76	..	..	..	..	43
42	75-76	..	..	71	..	70	72	42
41	..	..	75	..	70-71	..	..	41
40	..	73-74	..	70	..	..	..	40
39	..	..	74	..	..	69	71	39
38	74	..	..	69	..	..	..	38
37	..	72	73	..	68-69	68	70	37
36	..	..	..	..	..	..	..	36
35	72-73	..	72	67-68	..	67	69	35
34	..	71	..	..	..	..	..	34
33	..	..	71	..	66-67	66	..	33
32	..	..	..	..	..	..	68	32
31	..	69-70	70	..	..	65	..	31
30	..	..	..	65-66	..	..	67	30

29	68-71	..	69	..	63-65	64	..	29
28	..	68	68	..	..	..	66	28
27	..	..	..	63-64	..	63	..	27
26	..	66-67	67	..	..	..	..	26
25	..	..	66	62	61-62	62	65	25
24	64-67	..	..	..	..	..	..	24
23	..	64-65	65	..	..	61	64	23
22	..	..	64	61	58-60	..	..	22
21	..	62-63	..	..	..	..	63	21
20	63	60-61	63	60	..	60	62	20
19	..	..	62	59	56-57	59	..	19
18	..	..	61	..	..	..	61	18
17	..	58-59	..	58	..	58	..	17
16	59-62	..	60	..	53-55	..	60	16
15	..	56-57	59	57	..	57	..	15
14	..	..	58	..	52	56	59	14
13	54-58	53-55	57	56	..	..	58	13
12	..	..	56	54-55	..	55	57	12
11	53	51-52	55	..	48-51	54	56	11
10	..	..	54	53	..	53	55	10
9	49-52	49-50	52-53	..	47	52	54	9
8	..	..	51	51-52	..	51	53	8
7	46-48	47-48	50	..	42-46	50	52	7
6	..	44-46	48-49	..	..	49	50-51	6
5	44-45	..	46-47	47-50	38-41	48	49	5
4	40-43	42-43	45	..	..	46-47	47-48	4
3	39	35-41	43-44	44-46	37	44-45	45-46	3
2	31-38	27-34	40-42	42-43	34-36	41-43	43-44	2
1	22-30	..	27-39	27-41	25-33	31-40	27-42	1

Minnesota State-Wide Norms for
IOWA TESTS OF BASIC SKILLS
(Continued)

Grade 8

GRADE EQUIVALENT

Per-centile	Vocab.	RDG	Language					Maps	Per-centile
			Spell.	Capital	Punct.	Usage	Total		
99	108-116	107-116	111-120	114-120	111-118	108-115	108-113	112-117	99
98	105-107	105-106	110	113	109-110	107	106-107	111	98
97	102-104	103-104	108-109	112	. .	105-106	105	109-110	97
96	. .	102	106-107	111	108	. .	104	108	96
95	100-101	. .	105	110	107	103-104	. .	106-107	95
94	. .	101	104	109	106	. .	102-103	105	94
93	. .	99-100	103	. .	. .	102	101	. .	93
92	98-99	98	102	107-108	105	. .	100	104	92
91	. .	97	100-101	. .	104	100-101	. .	103	91
90	96-97	. .	99	. .	103	. .	99	102	90
89	. .	96	98	105-106	. .	. .	98	. .	89
88	94-95	95	97	. .	102	. .	97	101	88
87	93	94	. .	. .	101	97-99	96	. .	87
86	92	93	96	103-104	100	. .	. .	99-100	86
85	91	. .	95	. .	99	. .	95	. . .	85
84	90	92	. .	. .	98	. .	94	. .	84
83	. .	91	. .	101-102	. .	93-96	93	. .	83
82	88-89	. .	94	. .	97	. .	. .	96-98	82
81	. .	90	. .	100	96	. .	92	. .	81
80	87		. .	. .	. .	. .	. .	. .	80

79	..	89	92-93	98-99	94-95	..	91	..	79
78	..	..	..	..	..	90-92	..	94-95	78
77	..	88	..	..	..	..	90	..	77
76	86	87	90-91	96-97	..	..	..	..	76
75	..	..	..	..	92-93	89	89	92-93	75
74	..	86	..	95	..	..	..	..	74
73	85	..	..	..	..	..	88	91	73
72	..	85	88-89	..	..	..	87	..	72
71	..	..	..	..	89-91	..	..	..	71
70	84	84	86-87	93-94	..	86-88	86	89-90	70
39	..	..	..	..	..	..	..	..	69
68	..	83	..	..	..	..	85	..	68
67	83	..	..	..	87-88	..	..	..	67
66	..	82	84-85	90-92	..	..	84	..	66
65	..	..	..	..	..	..	..	..	65
64	..	81	..	..	..	..	83	87-88	64
63	82	..	82-83	..	85-86	82-85	..	..	63
62	81	80	..	87-89	..	..	82	..	62
61	..	..	..	..	..	..	81	..	61
60	..	..	81	86	..	..	..	..	60
59	..	79	..	..	..	..	80	85-86	59
58	80	..	..	84-85	82-84	78-81	..	..	58
57	..	78	79-80	..	..	..	79	..	57
56	79	..	..	83	..	..	..	83-84	56
55	..	77	..	..	..	..	78	..	55
54	78	..	..	81-82	79-81	77	..	82	54
53	..	76	77-78	..	..	..	77	..	53
52	..	..	..	80	..	..	..	..	52
51	77	..	..	..	77-78	..	76	81	51
50	..	75	..	..	..	74-76	..	..	50

Minnesota State-Wide Norms for
IOWA TESTS OF BASIC SKILLS
(Continued)

Grade 8

GRADE EQUIVALENT

Per-centile	Vocab.	RDG	Language					Maps	Per-centile
			Spell.	Capital	Punct.	Usage	Total		
49	76	..	75-76	78-79	..	..	75	80	49
48	..	74	..	..	..	..	..	..	48
47	..	..	..	..	74-76	73	74	79	47
46	75	73	73-74	..	..	..	..	..	46
45	..	..	..	75-77	..	..	73	..	45
44	..	72	..	..	71-73	..	..	..	44
43	74	..	..	..	..	..	72	77-78	43
42	..	70-71	71-72	72-74	..	69-72	..	..	42
41	..	..	..	..	70	..	71	..	41
40	73	..	..	..	..	..	70	..	40
39	..	69	69-70	70-71	68-69	..	..	75	39
38	..	..	..	..	..	..	69	..	38
37	..	..	..	68-69	..	65-68	..	74	37
36	71-72	68	66-68	..	67	..	68	..	36
35	..	..	..	67	..	..	67	..	35
34	..	..	..	..	65-66	..	..	..	34
33	..	67	..	65-66	..	..	66	71-73	33
32	69-70	..	64-65	..	..	..	65	..	32
31	..	66	..	64	64	..	..	..	31
30	..	..	..	..	..	61-64	64	..	30

29	..	65	..	..	62-63	..	63	68-70	29
28	68	64	62-63	62-63	..	..	..	..	28
27	..	..	..	..	61	..	62	..	27
26	..	63	..	..	..	57-60	61	..	26
25	06-67	..	60-61	59-61	59-60	..	60	..	25
24	..	..	..	..	57-58	..	59	65-67	24
23	..	62	58-59	..	..	56	58	..	23
22	64-65	..	..	57-58	55-56	..	57	..	22
21	..	61	56-57	56	..	..	..	..	21
20	63	..	55	54-55	..	53-55	56	61-64	20
19	..	59-60	54	..	53-54	..	..	..	19
18	61-62	..	..	53	..	52	55	..	18
17	..	58	53	52	51-52	..	54	..	17
16	..	57	52	..	..	..	53	58-60	16
15	59-60	56	..	50-51	49-50	..	..	..	15
14	58	..	51	..	46-48	48-51	52	..	14
13	..	55	50	..	..	..	51	54-57	13
12	56-57	53-54	..	47-49	44-45	..	50	..	12
11	..	..	48-49	..	..	..	49	..	11
10	..	51-52	..	44-46	42-43	43-47	48	..	10
9	53-55	50	46-47	..	40-41	..	46-47	50-53	9
8	52	48-49	43-45	41-43	39	..	45	..	8
7	50-51	46-47	..	..	37-38	39-42	44	46-49	7
6	47-49	..	40-42	38-40	35-36	..	43	..	6
5	43-46	44-45	37-39	35-37	34	35-38	41-42	41-45	5
4	40-42	41-43	36	32-34	31-33	..	39-40	..	4
3	37-39	40	34-35	29-31	28-30	32-34	37-38	37-40	3
2	35-36	36-39	28-33	27-28	25-27	30-31	35-36	34-36	2
1	23-34	28-35	19-27	20-26	18-24	24-29	25-34	27-33	1

Grade Equivalents for Selected Percentiles for the

IOWA TESTS OF BASIC SKILLS

Based on Minnesota State-Wide Norms (1970)

Males and Females Combined

	Grade 7 Percentile					Grade 8 Percentile				
	10	**25**	**50**	**75**	**90**	**10**	**25**	**50**	**75**	**90**
Vocabulary	46.0	57.0	67.0	76.0	85.0	54.0	66.0	76.5	85.7	96.0
Reading	43.0	52.5	65.0	75.5	85.0	51.0	62.7	75.0	86.5	96.5
Spelling	38.0	50.0	65.3	77.7	89.0	47.0	60.0	75.5	89.5	99.0
Capitalization	39.0	49.7	67.5	84.5	94.0	44.0	59.0	78.7	95.5	105.7
Punctuation	35.0	49.0	66.8	81.0	92.0	42.0	59.0	76.3	92.0	103.0
Language Usage	34.0	49.0	66.3	80.3	89.0	43.0	56.7	74.0	89.0	99.3
Language Total	40.0	51.5	66.0	78.5	87.5	48.0	60.0	75.5	89.0	99.0
Maps	44.5	55.2	68.4	77.8	90.0	51.0	65.6	80.5	92.0	102.0
Graphs	44.0	56.0	68.6	81.5	91.5	51.0	64.8	79.0	92.0	102.4
References	41.5	55.3	68.0	80.7	88.5	50.0	65.3	78.9	91.7	99.3
Wk. Study Skills Total	46.5	56.0	68.0	79.0	87.0	54.0	66.0	79.0	90.5	99.5
Arith. Concepts	45.0	54.5	66.5	77.3	86.0	53.0	62.0	75.5	89.0	100.0
Arith. Problems	39.8	51.0	61.8	71.8	81.0	47.5	61.0	73.0	82.5	91.0
Arith. Total	45.0	53.0	63.3	74.0	82.0	53.0	62.0	73.5	85.0	94.0
Composite	47.0	55.0	65.3	75.5	83.4	55.0	65.0	75.3	86.0	94.5

Minnesota State-Wide Norms
for
STANFORD ACHIEVEMENT TESTS, ADVANCED BATTERY

Males and Females Combined

The Minnesota norms for SAT(AB) are based upon scores of students who took the battery in Fall, 1969.

	N (Schools)	N (Students)
Grade 7	8	1,224
Grade 8	22	3,488

Schools included in the norm group were chosen to be as representative of the State as possible in terms of size and geographical location.

The distribution of Minnesota Scholastic Aptitude Test (MSAT) scores for the students from the norm group schools is almost identical to the MSAT distribution for all Minnesota Juniors indicating that the SAT norm group is probably quite representative of the entire Minnesota student population.

Minnesota State-Wide Norms for
STANFORD ACHIEVEMENT TEST, ADVANCED BATTERY
Forms W, X

Grade 7

GRADE EQUIVALENT

Percentile	Para. Mean.	Spell.	Lang.	Arith. Comp.	Arith. Conc.	Arith. Appl.	Soc. Stud.	Sci.	Percentile
99	116-127	120-127	111-119	92-115	118-129	116-129	115-129	117-129	99
98	113-115	118-119	109-110	89-91	116-117	113-115	114	116	98
97	112	116-117	108	86-88	114-115	111-112	112-113	114-115	97
96	110-111	115	107	..	111-113	..	111	112-113	96
95	108-109	113-114	106	84-85	107-110	108-110	..	110-111	95
94	..	111-112	105	..	105-106	..	108-110	108-109	94
93	107	108-110	104	82-83	..	104-107	..	..	93
92	..	..	..	..	103	..	107	106-107	92
91	106	106-107	103	80-81	91-102	..	106	..	91
90	105	..	102	..	..	..	103-105	..	90
89	..	104-105	101	78-79	..	98-103	102	104-105	89
88	104	..	100	..	96-98	..	..	..	88
87	..	102-103	..	76-77	..	..	100-101	..	87
86	102-103	..	99	..	..	..	..	102-103	86
85	100-101	99-101	98	..	92-95	91-97	96-99	..	85
84	99	..	96-97	72-75	..	..	..	..	84
83	..	..	93-95	..	88-91	..	..	100-101	83
82	96-98	96-98	..	..	..	..	92-95	..	82
81	94-95	..	..	68-71	86-87	..	..	98-99	81
80	92-93	93-95	89	..	..	..	..	..	80
79	..	..	..	..	..	85-90	89-91	..	79
78	90-91	90-92	88	..	85	..	..	96-97	78
77	89	..	..	..	..	..	87-88	..	77
76	..	..	86-87	66-67	82-84	..	..	92-95	76
75	86-88	88-89	..	..	..	..	86	..	75
74	..	..	85	..	..	..	..	90-91	74
73	..	..	..	..	..	..	84-85	87-89	73
72	84-85	86-87	84	..	..	82-84	..	..	72
71	..	..	..	64-65	..	..	..	..	71
70	..	..	82-83	..	80-81	..	82-83	85-86	70
69	82-83	84-85	..	..	..	..	..	..	69
68	..	..	80-81	..	..	..	..	..	68
67	..	82-83	..	..	..	..	80-81	..	67
66	..	..	..	..	..	..	..	83-84	66
65	80-81	..	79	62-63	..	..	..	..	65
64	..	80-81	..	..	78-79	79-81	79	..	64
63	..	..	78	..	..	..	..	..	63
62	78-79	..	..	..	..	..	78	80-82	62
61	..	79	77	..	..	..	..	..	61
60	77	..	..	..	..	..	77	77-79	60
59	..	..	76	..	..	..	..	..	59
58	76	..	..	60-61	..	..	..	76	58
57	..	78	75	..	76-77	76-78	76	..	57
56	..	..	..	..	..	..	..	..	56
55	74-75	..	74	..	..	..	72-75	75	55
54	..	76-77	..	..	..	..	..	..	54
53	..	..	73	..	..	..	..	72-74	53
52	72-73	..	..	..	74-75	..	..	..	52
51	..	..	..	58-59	..	..	..	..	51
50	..	74-75	..	..	..	74-75	..	69-71	50

Minnesota State-Wide Norms for

STANFORD ACHIEVEMENT TEST, ADVANCED BATTERY

Forms W, X

Grade 7
(Continued)

GRADE EQUIVALENT

Per-centile	Para. Mean.	Spell.	Lang.	Arith. Comp.	Arith. Conc.	Arith. Appl.	Soc. Stud.	Sci.	Per-centile
49	70-71	..	71	..	..	..	71	..	49
48	..	..	..	..	..	..	..	..	48
47	..	..	..	..	..	..	..	..	47
46	..	72-73	70	..	..	..	70	67-68	46
45	68-69	..	..	..	72-73	..	..	..	45
44	..	..	69	..	..	..	69	..	44
43	..	70-71	..	56-57	..	..	..	..	43
42	66-67	..	68	..	..	..	..	..	42
41	..	..	..	..	..	72-73	68	65-66	41
40	..	..	66-67	..	69-71	..	..	..	40
39	..	68-69	..	..	..	..	..	..	39
38	65	..	65	..	..	..	67	..	38
37	..	..	64	..	..	..	..	63-64	37
36	..	67	..	..	..	..	66	..	36
35	64	..	..	..	..	..	..	..	35
34	..	..	63	54-55	..	..	..	..	34
33	..	66	..	..	66-68	..	..	62	33
32	63	..	62	..	..	67-71	64-65	..	32
31	..	..	61	..	..	..	..	..	31
30	62	64-65	60	..	..	..	..	..	30
29	..	..	..	..	..	..	63	60-61	29
28	..	..	59	..	..	..	..	..	28
27	60-61	62-63	58	..	..	..	62	..	27
26	..	..	..	..	64-65	..	..	..	26
25	..	..	57	51-53	..	63-66	61	58-59	25
24	58-59	..	56	..	..	..	..	..	24
23	..	59-61	..	..	63	..	60	..	23
22	..	..	55	..	..	..	..	56-57	22
21	56-57	..	54	..	..	..	..	..	21
20	..	..	..	..	62	..	59	..	20
19	54-55	..	53	..	..	60-62	..	55	19
18	..	57-58	..	48-50	..	..	..	..	18
17	..	..	52	..	..	..	58	54	17
16	53	..	51	..	..	58-59	56-57	..	16
15	..	..	..	..	60-61	..	..	52-53	15
14	..	54-56	50	..	..	..	54-55	..	14
13	52	..	49	45-47	..	57	..	..	13
12	50-51	..	..	..	..	..	53	50-51	12
11	..	51-53	..	..	..	..	..	..	11
10	48-49	..	47	..	57-59	..	52	48-49	10
9	..	..	..	42-44	..	53-56	..	..	9
8	46-47	48-50	45-46	..	..	..	50-51	47	8
7	..	..	44	..	54-56	..	..	..	7
6	44-45	46-47	42-43	39-41	..	..	49	46	6
5	42-43	44-45	41	..	51-53	49-52	48	..	5
4	40-41	41-43	40	..	..	..	46-47	44-45	4
3	..	38-40	38-39	36-38	48-50	44-48	43-44	42-43	3
2	35-39	34-37	33-37	33-35	44-47	40-43	39-42	40-41	2
1	25-34	20-33	20-32	22-32	24-43	36-39	32-38	29-39	1

Minnesota State-Wide Norms for
STANFORD ACHIEVEMENT TEST, ADVANCED BATTERY
Forms W, X

Grade 8

GRADE EQUIVALENT

Percentile	Para. Mean.	Spell.	Lang.	Arith. Comp.	Arith. Conc.	Arith. Appl.	Soc. Stud.	Sci.	Percentile
99	123-129	126-129	120-129	121-129	127-129	125-129	124-129	122-129	99
98	121-122	125	118-119	119-120	126	123-124	122-123	121	98
97	120	124	116-117	117-118	124-125	..	121	119-120	97
96	118-119	123	115	115-116	..	121-122	120	..	96
95	..	122	114	112-114	122-123	..	119	118	95
94	116-117	120-121	112-113	..	..	119-120	..	117	94
93	..	..	111	108-111	120-121	..	118	116	93
92	114-115	119	110	104-107	..	116-118	117	..	92
91	113	118	109	..	118-119	..	..	114-115	91
90	..	..	..	100-103	..	115	115-116	..	90
89	112	117	108	..	116-117	113-114	114	112-113	89
88	..	..	107	..	..	..	..	..	88
87	..	116	106	96-99	..	..	113	110-111	87
86	110-111	115	..	..	..	..	..	..	86
85	..	..	105	92-95	114-115	111-112	112	..	85
84	108-109	113-114	..	..	..	..	..	108-109	84
83	..	..	104	..	..	..	111	..	83
82	107	111-112	103	89-91	111-113	..	..	..	82
81	106	..	102	..	..	108-110	110	106-107	81
80	..	108-110	..	..	..	..	..	..	80
79	..	..	101	86-88	107-110	..	..	104-105	79
78	105	..	..	..	..	..	108-109	..	78
77	..	106-107	100	..	105-106	..	107	..	77
76	104	..	99	..	..	..	..	102-103	76
75	..	104-105	..	84-85	103-104	104-107	106	..	75
74	..	..	98	..	..	..	..	..	74
73	102-103	..	..	..	..	..	104-105	100-101	73
72	..	102-103	96-97	..	99-102	..	..	..	72
71	100-101	..	..	..	..	..	102-103	..	71
70	..	..	93-95	82-83	..	..	..	..	70
69	99	99-101	..	..	..	98-103	..	98-99	69
68	96-98	..	90-92	..	96-98	..	100-101	..	68
67	94-95	..	..	..	..	..	..	..	67
66	..	96-98	89	80-81	..	..	96-99	96-97	66
65	92-93	..	88	..	..	..	..	..	65
64	90-91	..	..	..	92-95	..	..	..	64
63	..	93-95	86-87	..	..	91-97	92-95	92-95	63
62	89	..	..	78-79	..	..	..	..	62
61	..	90-92	85	..	..	..	..	90-91	61
60	..	..	84	..	88-91	..	89-91	..	60
59	86-88	..	..	..	..	..	87-88	87-89	59
58	..	88-89	82-83	76-77	86-87	..	..	..	58
57	..	..	..	..	..	..	86	..	57
56	84-85	..	80-81	..	..	85-90	..	85-86	56
55	..	86-87	..	..	85	..	..	..	55
54	..	..	79	..	..	..	84-85	..	54
53	82-83	..	..	72-75	..	..	..	..	53
52	..	84-85	78	..	..	..	..	83-84	52
51	..	..	77	..	82-84	..	82-83	..	51
50	80-81	..	..	..	..	..	..	..	50

Minnesota State-Wide Norms for
STANFORD ACHIEVEMENT TEST, ADVANCED BATTERY
Forms W, X

Grade 8
(Continued)

GRADE EQUIVALENT

Percentile	Para. Mean.	Spell.	Lang.	Arith. Comp.	Arith. Conc.	Arith. Appl.	Soc. Stud.	Sci.	Percentile
49	..	82-83	76	..	..	82-84	80-81	..	49
48	78-79	..	..	68-71	..	..	..	80-82	48
47	..	..	75	..	..	..	..	..	47
46	..	80-81	..	..	..	..	79	..	46
45	77	..	74	..	80-81	..	78	77-79	45
44	..	..	..	..	..	..	..	..	44
43	..	79	73	66-67	..	..	77	76	43
42	76	..	..	..	..	79-81	..	75	42
41	..	78	72	..	78-79	..	..	..	41
40	..	..	..	..	..	..	76	..	40
39	74-75	76-77	71	..	..	..	..	..	39
38	..	..	70	64-65	..	76-78	..	72-74	38
37	..	..	..	..	..	..	74-75	..	37
36	72-73	74-75	69	..	76-77	..	..	..	36
35	..	..	..	..	..	..	72-73	69-71	35
34	..	..	68	62-63	..	..	71	..	34
33	70-71	72-73	66-67	..	..	74-75	..	..	33
32	..	..	..	..	74-75	..	70	67-68	32
31	..	..	65	..	..	..	..	..	31
30	68-69	70-71	..	..	..	..	69	..	30
29	..	..	64	60-61	72-73	..	..	..	29
28	66-67	..	..	..	..	..	68	65-66	28
27	..	68-69	63	..	..	72-73	..	..	27
26	..	..	..	..	..	..	67	..	26
25	65	67	62	58-59	69-71	..	..	63-64	25
24	..	..	..	..	..	..	..	..	24
23	..	66	..	..	..	..	66	..	23
22	64	..	60-61	..	..	67-71	..	62	22
21	..	..	59	..	..	..	64-65	..	21
20	63	64-65	58	56-57	66-68	..	63	60-61	20
19	..	..	57	..	..	..	..	..	19
18	62	..	56	..	..	..	62	..	18
17	..	62-63	..	..	64-65	..	61	58-59	17
16	60-61	..	55	54-55	..	63-66	..	..	16
15	..	..	54	..	63	..	60	56-57	15
14	58-59	59-61	53	..	..	..	59	..	14
13	..	..	52	..	62	60-62	58	55	13
12	56-57	57-58	51	51-53	..	..	..	54	12
11	54-55	..	49-50	..	60-61	58-59	56-57	..	11
10	..	54-56	48	..	..	..	54-55	52-53	10
9	53	..	47	48-50	..	57	..	..	9
8	52	51-53	46	..	57-59	..	53	50-51	8
7	..	..	44-45	..	..	53-56	52	48-49	7
6	50-51	48-50	43	45-47	..	..	50-51	47	6
5	48-49	..	42	..	54-56	..	49	46	5
4	46-47	46-47	40-41	42-44	..	49-52	48	44-45	4
3	44-45	41-45	36-39	39-41	51-53	44-48	44-47	42-43	3
2	40-43	38-40	31-35	36-38	48-50	..	42-43	39-41	2
1	27-39	20-37	20-30	22-35	31-47	8-43	32-41	21-38	1

Grade Equivalents for Selected Percentiles for the

STANFORD ACHIEVEMENT TEST, ADVANCED BATTERY

Based on Minnesota State-Wide Norms (1970)

Males and Females Combined

	Grade 7 Percentile					Grade 8 Percentile				
	10	25	50	75	90	10	25	50	75	90
Paragraph Meaning	48.0	58.7	70.7	86.0	105.0	53.5	65.0	80.0	103.3	112.5
Spelling	50.0	60.5	74.0	88.0	105.0	54.0	67.0	82.7	104.0	117.5
Language	47.0	57.0	71.5	85.5	102.0	48.0	62.0	76.5	98.5	108.5
Arithmetic Computation	42.8	51.0	57.8	65.7	73.3	49.0	58.0	69.6	84.0	100.0
Arithmetic Concepts	57.0	63.7	73.7	81.7	98.0	59.0	69.0	81.7	103.0	117.0
Arithmetic Applications	54.0	63.0	74.0	83.7	95.5	57.5	70.0	82.4	104.0	115.0
Social Studies	52.0	61.0	71.3	86.0	104.0	54.0	66.7	81.0	106.0	115.0
Science	48.0	58.0	69.0	91.0	104.7	52.0	63.0	81.5	101.3	113.0

Minnesota State-Wide Norms

for

THE IOWA TESTS OF EDUCATIONAL DEVELOPMENT

Forms X-4 and Y-4

Full Length and "Class Period" Versions

Revised 1965

Grades 9, 10, 11, 12

Males and Females Combined

The following tables contain Minnesota norms for the Iowa Tests of Educational Development. These norms are based on the scores of Minnesota high school students tested in the fall of 1964.

Grade	N (Schools)	N (Students)
9	155	11,555
10	138	9,108
11	125	8,565
12	54	2,942

These norms were revised in 1965 by the Student Counseling Bureau at the University of Minnesota, which administers the Minnesota State-Wide Testing Programs. Forms X-4 and Y-4 were first used in the Program in the fall of 1964, replacing Forms X-3 and Y-3, upon which the previous, 1956, Minnesota norms were based.

The representativeness of these norms was checked by comparing the Minnesota Scholastic Aptitude Test (MSAT) distributions for schools using ITED at each grade level with MSAT distributions for all Minnesota high schools. MSAT is administered to virtually every Minnesota junior each year and thus serves as a good scholastic aptitude "bench mark" against which to judge the representativeness of any Minnesota norm group. From this and other checks the 1965 ITED norms appear quite representative of Minnesota students at each respective grade level.

The scores used in the norms are standard scores. Although the various forms of ITED are equated through the use of standard scores and a single norm table should suffice for all forms, enough differences exist between Forms 3 and 4 so it is not advisable to use these tables with the old Forms X-3 and Y-3. Users are cautioned that equal standard scores on two or more subtests does *not* necessarily represent equivalent performance (See pages 33-34, "How to Use the Test Results," ITED Manual).

When ITED was restandardized nationally in 1963, the publishers adopted the commonly accepted convention of computing norms to the midpoint of the class interval. Therefore, the same convention has been adopted in the preparation of these norms.

The Iowa Tests of Educational Development, Form 4, have nine subtests and a Composite Score.

Test 1 Understanding of Basic Social Concepts

Test 2 Background in the Natural Sciences

Test 3 Correctness and Appropriateness of Expression

Test 4 Ability to do Quantitative Thinking

Test 5 Ability to Interpret Reading Materials in the Social Studies

Test 6 Ability to Interpret Reading Materials in the Natural Sciences

Test 7 Ability to Interpret Literary Material

Test 8 General Vocabulary

Composite The Composite Score is based on a combination of the scores on Tests 1-8. Each test receives approximately equal weighting in determination of this score.

Test 9 Use of Sources of Information

Minnesota State-Wide Norms for
THE IOWA TESTS OF EDUCATIONAL DEVELOPMENT
Forms X-4 and Y-4
Revised 1965 — Based on Fall Administration 1964

NINTH GRADE

Males and Females Combined

Standard Score	Percentile										Standard Score
	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7	Test 8	C	Test 9	
27	..	99	..	..	99	99	..	..	99	99	27
26	99	98	..	99	98	98	99	99	98	98	26
25	98	96	..	98	97	96	98	98	98	97	25
24	97	94	99	97	96	95	97	98	96	95	24
23	96	91	98	96	94	93	96	97	95	93	23
22	94	87	97	94	91	90	94	95	92	91	22
21	91	83	94	92	88	87	92	93	90	88	21
20	88	78	92	89	85	84	88	90	86	85	20
19	84	73	89	85	81	81	84	87	82	82	19
18	80	67	84	81	77	78	79	82	77	77	18
17	75	61	78	78	72	74	75	75	72	73	17
16	69	53	71	73	67	69	69	68	67	68	16
15	62	46	63	68	62	64	63	61	61	62	15
14	53	41	55	61	57	58	56	53	53	56	14
13	45	36	47	54	51	51	51	46	46	50	13
12	39	32	40	48	44	45	44	40	39	42	12
11	34	26	33	40	38	38	38	33	32	35	11
10	29	21	26	31	30	31	31	27	26	30	10
9	22	17	20	24	22	26	25	21	20	26	9
8	17	12	15	18	15	19	19	15	15	21	8
7	13	8	12	12	10	13	13	11	10	17	7
6	8	5	8	8	6	9	9	8	7	12	6
5	6	4	6	6	3	7	6	5	4	7	5
4	4	2	4	4	2	4	4	3	2	4	4
3	3	2	2	3	2	3	2	2	1	2	3
2	2	1	1	..	1	2	1	1	..	1	2
1	1	..	..	1	..	1	..	..	..	..	1

Minnesota State-Wide Norms for
THE IOWA TESTS OF EDUCATIONAL DEVELOPMENT
Forms X-4 and Y-4
Revised 1965 — Based on Fall Administration 1964
TENTH GRADE
Males and Females Combined

	Percentile										
Standard Score	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7	Test 8	C	Test 9	Standard Score
30	..	..	..	..	..	..	..	..	99	..	30
29	..	..	..	..	99	99	..	..	98	..	29
28	99	99	..	99	98	98	99	99	98	99	28
27	98	97	..	98	97	97	98	98	97	97	27
26	97	95	..	96	96	95	97	98	96	95	26
25	95	91	99	95	94	92	96	97	94	92	25
24	93	87	98	93	92	89	94	95	92	89	24
23	90	81	96	90	89	86	92	93	88	86	23
22	87	76	93	88	85	82	90	90	85	82	22
21	83	69	90	85	80	78	86	86	80	78	21
20	79	63	86	81	76	74	81	81	75	73	20
19	73	55	81	75	71	70	75	76	69	68	19
18	68	49	75	70	66	66	69	69	63	62	18
17	62	43	67	66	61	61	64	61	57	57	17
16	55	36	59	60	55	56	58	53	51	51	16
15	48	29	51	54	50	50	52	45	45	46	15
14	40	25	42	48	46	44	45	37	38	40	14
13	32	21	35	41	40	38	40	31	32	34	13
12	27	18	28	36	34	32	34	26	25	28	12
11	23	14	23	29	29	27	29	20	20	22	11
10	19	11	18	22	22	21	23	16	15	19	10
9	14	8	13	16	16	18	18	13	11	15	9
8	11	6	10	12	11	13	14	9	8	12	8
7	8	4	7	8	7	9	10	7	5	9	7
6	5	2	5	5	4	6	7	5	3	7	6
5	4	2	3	4	3	5	5	3	2	4	5
4	3	1	2	3	2	3	3	2	1	2	4
3	2	..	1	2	1	2	1	1	..	1	3
2	1	..	..	..	..	1	..	..	..	..	2
1	..	..	..	1	..	..	..	..	..	..	1

Minnesota State-Wide Norms for
THE IOWA TESTS OF EDUCATIONAL DEVELOPMENT
Forms X-4 and Y-4
Revised 1965 — Based on Fall Administration 1964

ELEVENTH GRADE

Males and Females Combined

	Percentile										
Standard Score	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7	Test 8	C	Test 9	Standard Score
33	..	..	..	..	..	..	..	..	99	..	33
32	..	..	..	..	..	..	..	..	98	..	32
31	..	..	..	99	..	99	..	..	97	..	31
30	99	..	..	98	99	98	..	99	96	99	30
29	97	99	..	97	97	96	99	98	94	98	29
28	95	97	..	96	95	94	98	97	93	96	28
27	93	95	99	94	93	92	96	96	91	92	27
26	90	91	98	92	91	89	94	94	89	87	26
25	86	86	96	89	88	85	92	92	86	83	25
24	82	80	93	87	84	80	88	89	82	77	24
23	78	74	90	83	79	75	85	85	78	72	23
22	73	67	85	79	74	70	81	81	72	67	22
21	68	60	79	76	68	64	76	76	67	62	21
20	63	53	74	71	63	60	69	70	61	58	20
19	57	46	67	64	58	56	62	63	55	53	19
18	52	40	60	59	53	51	56	55	49	47	18
17	46	34	53	56	48	47	51	47	43	42	17
16	40	27	45	50	43	42	46	40	37	37	16
15	34	22	36	44	39	37	40	33	32	32	15
14	27	19	29	38	34	32	34	27	27	27	14
13	21	16	23	33	29	27	30	22	21	22	13
12	18	13	19	28	25	23	25	18	17	18	12
11	14	10	15	22	21	19	21	14	13	14	11
10	11	8	11	17	16	14	17	11	9	12	10
9	8	6	8	13	11	12	13	8	7	10	9
8	6	4	6	9	8	8	10	6	5	8	8
7	4	3	4	6	5	5	6	4	3	6	7
6	2	2	3	4	3	4	5	3	2	4	6
5	2	1	2	3	2	3	3	2	1	2	5
4	1	..	1	2	1	2	2	1	..	1	4
3	..	..	..	1	..	1	1	..	..	..	3
2	..	..	..	..	..	..	..	..	..	..	2
1	..	..	..	..	..	..	..	..	..	..	1

Minnesota State-Wide Norms for
THE IOWA TESTS OF EDUCATIONAL DEVELOPMENT

Forms X-4 and Y-4

Revised 1965 — Based on Fall Administration 1964

TWELFTH GRADE

Males and Females Combined

	Percentile										
Standard Score	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7	Test 8	C	Test 9	Standard Score
35	..	..	..	..	..	..	..	..	99	..	35
34	..	..	..	..	..	..	..	..	98	..	34
33	..	..	..	..	..	..	..	..	97	..	33
32	..	..	..	99	..	99	..	..	96	..	32
31	99	..	..	98	99	98	..	..	95	..	31
30	98	99	..	96	98	96	..	99	93	99	30
29	96	98	..	94	95	95	99	97	91	97	29
28	93	96	99	92	93	93	97	96	89	94	28
27	90	93	98	89	90	90	95	94	87	89	27
26	87	89	96	86	87	86	92	92	85	83	26
25	83	83	93	83	83	81	89	89	81	78	25
24	77	77	89	80	79	76	85	85	77	72	24
23	73	71	84	76	73	71	81	81	71	67	23
22	67	64	78	73	67	66	77	75	66	62	22
21	62	58	73	69	61	61	71	69	61	57	21
20	56	51	67	64	56	57	64	62	55	51	20
19	50	44	60	58	51	53	56	56	49	46	19
18	44	38	53	53	46	49	50	49	43	40	18
17	39	32	45	49	41	44	45	41	37	35	17
16	34	25	38	44	36	39	40	34	31	30	16
15	28	20	30	39	33	35	34	27	26	25	15
14	22	17	24	33	29	30	29	21	22	21	14
13	17	14	18	28	24	24	25	17	17	17	13
12	13	11	14	24	20	20	21	14	13	13	12
11	11	9	11	18	17	16	17	10	9	10	11
10	9	6	8	13	13	13	13	8	7	8	10
9	6	5	6	10	9	10	10	6	5	7	9
8	4	4	4	7	6	7	7	5	3	5	8
7	3	2	3	5	4	5	5	3	2	4	7
6	2	1	2	3	3	3	4	2	1	3	6
5	1	..	1	2	1	2	2	1	..	1	5
4	..	..	..	1	..	1	1	..	..	..	4
3	..	..	..	..	..	..	..	..	..	..	3
2	..	..	..	..	..	..	..	..	..	..	2
1	..	..	..	..	..	..	..	..	..	..	1

Standard Scores for Selected Percentiles of 10, 25, 50, 75, 90 for

THE IOWA TESTS OF EDUCATIONAL DEVELOPMENT

Forms X-4 and Y-4

Based on Minnesota State-Wide Norms (Revised 1965)

Males and Females Combined

NINTH GRADE

Percentile	1	2	3	4	5	6	7	8	C	9	Percentile
10	6.4	7.5	6.5	6.5	7.0	6.2	6.2	6.7	7.0	5.6	10
25	9.4	10.8	9.8	9.1	9.4	8.2	9.0	9.7	9.8	8.8	25
50	13.6	15.6	13.4	12.3	12.8	12.8	12.2	13.6	13.6	13.0	50
75	17.0	19.4	16.6	16.4	17.6	17.2	17.0	17.0	17.6	17.5	75
90	20.7	22.8	19.3	20.3	21.7	22.0	20.5	20.0	21.0	21.7	90

TENTH GRADE

Percentile	1	2	3	4	5	6	7	8	C	9	Percentile
10	7.7	9.7	8.0	7.5	7.8	7.2	7.0	8.2	8.7	7.3	10
25	11.5	14.0	11.4	10.4	10.4	10.7	10.3	11.8	12.0	11.5	25
50	15.3	18.2	14.9	14.3	15.0	15.0	14.7	15.6	15.8	15.8	50
75	19.3	21.2	18.0	19.0	19.8	20.2	19.0	18.2	20.0	20.4	75
90	23.0	24.8	21.0	23.0	23.3	24.3	22.0	22.0	23.5	24.3	90

ELEVENTH GRADE

Percentile	1	2	3	4	5	6	7	8	C	9	Percentile
10	9.7	11.0	9.7	8.2	8.7	8.5	8.0	9.7	10.2	9.0	10
25	13.7	15.6	13.3	11.5	12.0	12.5	12.0	13.6	13.7	13.6	25
50	17.7	19.6	16.6	16.0	17.4	17.8	16.8	17.4	18.2	18.5	50
75	22.4	23.2	20.2	20.8	22.2	23.0	20.9	20.8	22.5	23.6	75
90	26.0	25.8	23.0	25.3	25.7	26.3	24.5	24.3	26.5	26.6	90

TWELFTH GRADE

Percentile	1	2	3	4	5	6	7	8	C	9	Percentile
10	10.5	11.5	10.7	9.0	9.2	9.0	9.0	11.0	11.2	11.0	10
25	14.5	16.0	14.2	12.2	13.2	13.2	13.0	14.7	14.8	15.0	25
50	19.0	19.9	17.6	17.2	18.8	18.2	18.0	18.1	19.2	19.8	50
75	23.5	23.7	21.4	22.7	23.3	23.8	21.7	22.0	23.7	24.5	75
90	27.0	26.2	24.2	27.3	27.0	27.0	25.3	25.3	28.5	27.2	90

STANFORD ACHIEVEMENT TEST, HIGH SCHOOL BATTERY

Minnesota Norms

Forms W, X

Grade 9

STANDARD SCORE

Percentile	Engl.	Num. Comp.	Mathematics Part A	Mathematics Tot.	RDG	Science Part A	Science Tot.	Soc. Stud.	Spell.	Arts & Human	Bus & Econ.	Tech. Comp.	Percentile
99	66-84	68-80	64-80		66-84	66-86		63-82	68-82	65-90	60-88	65-84	99
98	65	66-67	63		65	65		62	66-67	64	59	64	98
97	64	64-65	62		63-64	62-64		. .	65	63	58	63	97
96	62-63	63	61		61-62	61		61	64	62	. .	62	96
95	61	62	. .		60	60		60	63	61	56-57	61	95
94	60	61	60		59	. .		59	62	60	. .	. .	94
93	. .	60	59		. .	59		. .	61	. .	55	60	93
92	59	. .	. .		58	. .		58	60	59	. .	. .	92
91	. .	. .	58		57	58		. .	. .	. .	. .	59	91
90	58	59	. .		. .	. .		57	59	58	54	. .	90
89	. .	. .	. .		56	57		56	. .	. .	. .	58	89
88	. .	58	57		. .	. .		. .	. .	57	53	. .	88
87	. .	. .	. .		. .	. .		. .	58	. .	. .	57	87
86	57	. .	. .		55	56		55	. .	56	. .	. .	86
85	. .	57	56		. .	. .		. .	57	. .	52	. .	85
84	56	. .	. .		. .	. .		. .	. .	55	. .	56	84
83	. .	56	. .		54	55		54	. .	. .	. .	. .	83
82	55	55	55		. .	. .		. .	56	54	. .	. .	82
81	. .	. .	. .		. .	. .		. .	. .	. .	51	. .	81
80	. .	. .	. .		. .	54		. .		53	. .	. .	80

79	..	..	..	53	..	53	..	..	..	55	79
78	54	54	..	..	53	..	55	..	..	..	78
77	..	..	54	..	..	..	..	52	50	..	77
76	..	..	..	..	..	52	..	..	..	..	76
75	..	..	..	52	..	..	..	..	..	..	75
74	53	53	..	..	52	..	54	51	..	54	74
73	..	..	..	51	..	51	..	..	..	..	73
72	..	..	..	..	..	..	53	..	49	..	72
71	..	52	53	..	..	..	..	..	..	..	71
70	52	..	..	..	51	..	52	..	..	..	70
69	..	..	..	..	..	..	..	50	..	53	69
68	..	..	..	50	..	..	..	..	48	..	68
67	51	..	..	..	..	50	..	..	..	..	67
66	..	51	..	..	50	..	51	..	..	..	66
65	..	..	52	..	..	..	..	..	..	52	65
64	..	..	..	49	..	..	..	49	..	..	64
63	50	..	..	..	..	..	..	..	47	..	63
62	..	..	..	48	49	..	..	..	..	..	62
61	..	..	..	..	..	..	..	..	..	..	61
60	..	..	..	..	..	..	50	..	..	51	60
59	..	50	..	..	..	49	..	48	46	..	59
58	49	..	51	..	..	..	..	..	..	..	58
57	..	..	..	..	48	..	49	..	..	..	57
56	..	..	..	47	..	..	..	..	..	..	56
55	..	..	..	..	..	..	..	47	..	..	55
54	..	..	..	..	..	48	..	..	..	50	54
53	..	..	..	..	47	..	..	..	45	..	53
52	48	49	..	..	..	..	48	..	..	..	52
51	..	..	50	..	..	..	..	..	..	..	51
50	..	..	..	..	..	..	..	..	..	..	50

STANFORD ACHIEVEMENT TEST, HIGH SCHOOL BATTERY

Minnesota Norms

Forms W, X

Grade 9
(Continued)

STANDARD SCORE

Per-centile	Engl.	Num. Comp.	Mathematics		RDG	Science		Soc. Stud.	Spell.	Arts & Human	Bus & Econ.	Tech. Comp.	Per-centile
			Part A	Tot.		Part A	Tot.						
49	..	..	..		..	..		47	..	..	..	49	49
48	..	48	..		..	46		..	..	46	..	..	48
47	..	..	..		..	..		..	47	..	44	..	47
46	47	..	..		..	..		..	..	..	..	..	46
45	..	..	49		45	..		..	..	..	..	..	45
44	..	47	..		..	..		..	..	..	43	48	44
43	..	..	..		..	45		46	..	..	..	..	43
42	..	..	..		..	..		..	46	..	42	..	42
41	..	..	..		..	..		..	..	45	..	..	41
40	46	46	..		44	..		..	..	..	..	47	40
39	..	..	48		..	44		45	..	..	..	..	39
38	..	..	..		..	..		..	..	..	..	..	38
37	..	..	..		43	..		..	..	44	41	..	37
36	45	45	..		..	43		..	45	..	..	..	36
35	..	..	..		..	..		..	..	..	..	46	35
34	..	..	47		42	..		44	..	..	..	..	34
33	..	..	..		..	..		..	..	43	..	..	33
32	44	44	..		..	42		..	44	..	..	..	32
31	..	..	..		41	..		..	..	..	40	..	31
30	..	..	..		..	..		43	..	..	..	45	30

29	..	..	46	..	..	..	43	..	..	..	29
28	43	43	..	..	41	..	..	42	..	..	28
27	..	..	..	..	..	..	..	..	..	..	27
26	..	..	..	40	..	42	42	..	39	44	26
25	..	42	..	..	..	..	..	41	..	..	25
24	42	..	45	..	40	..	..	..	..	43	24
23	..	..	..	..	..	41	41	..	..	..	23
22	..	..	..	..	..	..	..	..	..	42	22
21	41	41	44	..	39	..	..	40	38	..	21
20	..	..	..	39	..	40	40	..	..	..	20
19	40	..	43	..	..	..	..	39	..	..	19
18	..	40	..	..	38	..	..	..	37	..	18
17	39	..	..	..	..	39	39	..	..	41	17
16	..	..	..	38	..	..	..	38	..	..	16
15	38	39	42	..	37	..	..	..	..	..	15
14	37	..	..	37	..	38	..	..	36	..	14
13	36	..	41	..	36	..	38	37	..	40	13
12	35	38	40	36	..	37	..	..	35	..	12
11	..	..	..	..	35	36	37	36	34	39	11
10	34	37	39	35	34	..	..	35	..	..	10
9	..	..	..	..	33	..	36	..	..	..	9
8	32-33	36	38	34	32	35	..	34	33	38	8
7	31	35	..	..	..	34	..	33	..	..	7
6	30	..	37	33	31	..	35	..	32	37	6
5	28-29	34	36	32		33	34	..	31	36	5
4	27	33	35	31	30	32	33	32	..	35	4
3	26	31-32	34	29-30	29	31	32	31	30	34	3
2	25	27-30	33	26-28	28	30	31	30	28-29	32-33	2
1	..	25-26	25-32	25	25-27	25-29	25-30	25-29	25-27	25-31	1

STANFORD ACHIEVEMENT TEST, HIGH SCHOOL BATTERY

Minnesota Norms

Forms W, X

Grade 10

STANDARD SCORE

Percentile	Engl.	Num. Comp.	Mathematics Part A	Mathematics Tot.	RDG	Science Part A	Science Tot.	Soc. Stud.	Spell.	Arts & Human	Bus & Econ.	Tech. Comp.	Percentile
99	70-84	74-80	71-80		70-84	70-86		70-82	70-82	67-90	66-88	69-84	99
98	68-69	72-73	69-70		68-69	67-69		67-69	68-69	66	63-65	68	98
97	67	71	68		67	66		...	66-67	65		67	97
96	66	70	67		66			66	65	64	62	66	96
95	65	68-69	66		65	65		65	...	...	...	...	95
94	64	67	65		64	64		64	64	63	61	65	94
93	...	66	64			63			...	..			93
92	63	65	...		63			63	63	62	60		92
91	62	64	63		62	62		...	...	...		64	91
90	...	...	...		...			62	...	61	...	63	90
89	...	63	...		...	61		...	62		59	...	89
88	61	62	62		61	...		61	...	60	...	62	88
87	...	...	...		...			...	...			...	87
86	60	61	61		60	60		60	61	59	58	61	86
85	...	60	...		...			...	...	...	...	...	85
84	59	...	...		59			59	...		...	...	84
83	...	...	...			59		...	60	58		60	83
82	...	...	60		58			...		...	56-57	...	82
81	...	59	...		...	58		58	59		...	...	81
80	58	...	...		57				...	57			80

79	..	..	..	..	..	..	..	..	55	59	79
78	..	..	59	..	..	..	58	..	..	..	78
77	57	58	..	56	57	57	..	56	..	..	77
76	..	..	..	..	..	..	..	..	..	58	76
75	..	..	..	..	..	..	57	..	54	..	75
74	56	57	58	..	56	56	..	..	..	57	74
73	..	..	..	55	..	..	..	55	..	..	73
72	..	56	..	..	..	..	56	..	..	..	72
71	..	55	57	..	55	55	..	..	53	..	71
70	55	..	..	..	..	..	..	..	..	56	70
69	..	..	..	54	..	..	..	54	..	..	69
68	..	..	..	..	..	..	55	..	..	..	68
67	..	..	56	..	54	54	..	..	..	..	67
66	..	54	..	..	..	..	..	..	52	..	66
65	54	..	..	..	..	..	..	53	..	55	65
64	..	..	..	53	..	..	..	..	..	..	64
63	..	..	..	..	53	..	54	..	..	..	63
62	..	53	55	..	..	53	..	..	..	..	62
61	..	..	..	..	..	..	..	..	51	..	61
60	53	..	..	52	..	..	53	52	..	54	60
59	..	..	..	..	52	..	..	..	..	..	59
58	..	52	..	..	..	52	..	..	..	..	58
57	..	..	54	..	..	..	..	..	..	..	57
56	52	..	..	51	..	..	52	51	50	53	56
55	..	..	..	..	51	..	..	..	..	..	55
54	..	51	..	..	..	..	..	..	..	..	54
53	..	..	..	..	..	51	..	..	..	..	53
52	..	..	53	50	..	..	..	..	..	52	52
51	51	..	..	..	50	..	51	50	49	..	51
50	..	..	..	..	..	..	..	..	..	..	50

STANFORD ACHIEVEMENT TEST, HIGH SCHOOL BATTERY

Minnesota Norms

Forms W, X

Grade 10
(Continued)

STANDARD SCORE

Per-centile	Engl.	Num. Comp.	Mathematics Part A	Mathematics Tot.	RDG	Science Part A	Science Tot.	Soc. Stud.	Spell.	Arts & Human	Bus & Econ.	Tech. Comp.	Per-centile
49	..	..	..		..	..		..	..	..	..	..	49
48	..	..	..		..	..		..	..	..	..	..	48
47	50	50	52		49	..		50	..	..	..	51	47
46	..	..	..		..	49		..	50	..	..	..	46
45	..	..	..		..	..		..	..	49	48	..	45
44	..	..	..		..	..		..	..	..	..	..	44
43	..	..	..		48	48		..	49	..	..	..	43
42	..	..	51		..	..		..	..	..	..	..	42
41	49	49	..		..	..		49	..	48	..	..	41
40	..	..	..		..	47		..	..	..	47	50	40
39	..	..	..		47	..		..	..	..	..	..	39
38	..	..	50		..	..		..	..	..	..	..	38
37	48	48	..		..	..		48	48	..	..	..	37
36	..	..	..		..	46		..	..	47	..	..	36
35	..	..	..		..	..		..	..	..	..	49	35
34	..	..	..		46	..		..	..	..	46	..	34
33	..	47	49		..	..		47	..	..	..	..	33
32	47	..	..		..	..		..	47	..	..	..	32
31	..	..	..		..	45		..	..	..	..	48	31
30	..	46	..		45	..		..	..	46	..	..	30

29	..	..	48	..	..	46	46	..	45	..	29
28	46	..	..	..	..	..	..	..	..	..	28
27	..	..	..	..	44	..	..	..	..	..	27
26	..	..	..	..	..	45	45	..	..	47	26
25	45	45	..	44	..	..	..	..	44	..	25
24	..	..	47	..	..	..	..	45	..	..	24
23	..	..	..	..	43	..	..	..	..	46	23
22	..	..	..	43	..	44	44	..	43	..	22
21	44	44	..	..	..	..	..	44	..	..	21
20	..	..	46	..	42	..	..	..	42	..	20
19	..	..	..	42	..	43	43	43	..	45	19
18	43	43	..	..	..	..	..	..	..	..	18
17	..	..	..	..	41	..	42	..	41	..	17
16	..	..	45	41	..	42	..	42	..	..	16
15	42	42	..	..	40	..	41	..	..	44	15
14	..	..	44	..	..	..	..	..	40	..	14
13	41	41	43	40	39	41	40	41	..	43	13
12	..	..	..	..	..	..	..	..	39	42	12
11	..	..	..	..	38	40	39	40	..	..	11
10	40	40	..	39	..	39	..	39	..	..	10
9	39	39	42	..	37	..	38	..	38	41	9
8	38	..	41	38	36	38	..	38	..	..	8
7	37	38	40	37	..	37	37	..	37	40	7
6	35-36	37	..	36	35	36	36	37	..	..	6
5	34	36	39	35	33-34	35	..	35-36	36	39	5
4	32-33	35	38	..	32	34	35	34	34-35	38	4
3	30-31	34	36-37	32-34	30-31	33	33-34	33	33	37	3
2	26-29	31-33	34-35	29-31	28-29	30-32	31-32	30-32	30-32	34-36	2
1	25	25-30	25-33	25-28	25-27	25-29	25-30	25-29	25-20	25-33	1

STANFORD ACHIEVEMENT TEST, HIGH SCHOOL BATTERY

Minnesota Norms

Forms W, X

Grade 11

STANDARD SCORE

Per-centile	Engl.	Num. Comp.	Mathematics Part A	Mathematics Tot.	RDG	Science Part A	Science Tot.	Soc. Stud.	Spell.	Arts & Human	Bus & Econ.	Tech. Comp.	Per-centile
99	74-84	76-80	76-80	72-87	74-84	72-86	75-87	71-82	72-82	71-90	73-88	75-84	99
98	72-73	74-75	74-75	71	70-73	70-71	74	69-70	69-71	70	71-72	74	98
97	70-71	72-73	73	70	68-69	69	73	68	..	69	..	73	97
96	69	71	72	69	..	68	72	67	68	68	70	72	96
95	68	70	71	..	67	67	71	..	..	67	68-69	71	95
94	..	69	..	68	66	..	70	66	67	66	..	70	94
93	67	68	70	..	..	66	69	..	66	65	67	69	93
92	66	..	69	67	..	..	68	65	65	64	..	68	92
91	..	67	68	..	65	65	67	..	..	..	66	67	91
90	..	66	67	66	..	..	..	64	64	63	..	66	90
89	65	..	..	..	..	64	..	63	..	..	65	..	89
88	..	65	..	65	64	63	66	..	..	..	..	65	88
87	64	..	66	..	..	..	..	..	63	62	64	..	87
86	..	64	..	..	63	..	65	62	..	..	63	64	86
85	..	..	65	64	..	..	..	..	..	61	..	63	85
84	63	63	64	..	..	62	..	..	62	..	62	62	84
83	..	..	..	..	62	..	64	..	..	..	..	..	83
82	62	62	..	63	..	..	..	61	..	60	61	61	82
81	..	..	..	..	..	..	..	..	61	..	..	..	81
80	61	..	63	..	61	61	63	..	..	59	..	..	80

79	..	60	..	62	..	..	..	60	..	..	60	..	79
78	..	..	..	..	..	..	..	..	60	58	..	60	78
77	..	..	62	..	60	60	62	..	..	..	..	..	77
76	60	..	..	61	..	..	..	59	..	..	..	..	76
75	..	59	..	..	59	..	..	..	59	57	59	..	75
74	..	..	..	..	..	59	61	..	..	..	..	59	74
73	59	..	..	60	..	..	..	58	..	..	..	..	73
72	..	..	61	..	58	..	..	..	..	..	..	..	72
71	..	58	..	..	..	58	60	..	58	56	..	..	71
70	..	..	..	59	..	..	..	..	..	..	..	..	70
69	..	..	..	..	57	..	..	57	..	..	58	58	69
68	58	..	60	..	..	..	..	..	..	55	..	..	68
67	..	..	..	..	56	57	..	..	57	..	..	..	67
66	..	57	..	58	..	..	..	..	..	..	..	..	66
65	..	..	..	..	..	..	59	56	..	54	..	57	65
64	..	56	59	..	..	..	..	..	56	..	56-57	..	64
63	57	..	..	..	..	..	..	..	..	..	..	..	63
62	..	55	..	..	55	56	..	..	..	..	..	..	62
61	56	..	..	57	..	..	58	55	..	53	..	..	61
60	..	..	58	..	..	..	..	..	..	..	..	..	60
59	..	..	..	..	..	..	57	..	..	..	55	56	59
58	..	..	..	..	..	55	..	..	55	52	..	..	58
57	55	54	..	..	54	..	..	..	..	..	..	..	57
56	..	..	57	56	..	..	..	54	..	..	..	..	56
55	..	..	..	..	..	..	56	..	..	..	..	..	55
54	..	..	56	..	..	54	..	..	..	51	54	..	54
53	..	53	..	..	..	..	..	..	..	..	..	55	53
52	..	..	..	..	53	..	..	..	54	..	..	..	52
51	54	..	..	55	..	..	..	53	..	..	..	..	51
50	..	..	55	..	..	53	55	..	..	..	..	..	50

STANFORD ACHIEVEMENT TEST, HIGH SCHOOL BATTERY

Minnesota Norms

Forms W, X

Grade 11
(Continued)

STANDARD SCORE

Per-centile	Engl.	Num. Comp.	Mathematics Part A	Mathematics Tot.	RDG	Science Part A	Science Tot.	Soc. Stud.	Spell.	Arts & Human	Bus & Econ.	Tech. Comp.	Per-centile
49	. .	. .	. .	. .	. .	. .	. .	. .	53	. .	. .	. .	49
48	. .	52	. .	. .	. .	. .	. .	52	. .	. .	53	. .	48
47	53	. .	54	54	52	. .	54	. .	. .	50	. .	54	47
46	. .	. .	. .	. .	. .	52	. .	. .	. .	. .	. .	. .	46
45	. .	. .	. .	. .	. .	. .	. .	. .	52	. .	. .	. .	45
44	. .	51	. .	53	. .	. .	. .	51	. .	. .	52	. .	44
43	52	. .	53	. .	51	. .	53	. .	. .	. .	. .	. .	43
42	. .	. .	. .	. .	. .	51	. .	. .	. .	. .	. .	53	42
41	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	41
40	. .	. .	. .	52	. .	. .	. .	. .	51	49	. .	. .	40
39	51	. .	52	. .	50	. .	52	. .	. .	. .	51	52	39
38	. .	50	. .	. .	. .	50	. .	. .	. .	. .	. .	. .	38
37	. .	. .	. .	. .	. .	. .	51	50	. .	48	. .	. .	37
36	50	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	36
35	. .	. .	51	51	49	. .	. .	. .	50	. .	. .	51	35
34	. .	. .	. .	. .	. .	49	. .	. .	. .	. .	50	. .	34
33	. .	. .	. .	. .	. .	. .	. .	. .	. .	47	. .	. .	33
32	. .	. .	. .	. .	48	. .	50	. .	. .	. .	. .	. .	32
31	49	49	50	50	. .	. .	. .	49	49	. .	. .	. .	31
30	. .	. .	. .	. .	. .	48	. .	. .	. .	. .	49	50	30

29							49			46			29
28		48	49		47			48	48				28
27	48			49								49	27
26						47	48			45	48		26
25		47						47				48	25
24	47		48		46		47		47				24
23		46				46					47		23
22			47				46	46		44			22
21		45		47					46			47	21
20	46				45	45					46		20
19			[illegible]				45	45					19
18		44		46					45	43		46	18
17	45				44			44			45		17
16						44	44						16
15	44	43	45		43				44		44	45	15
14		42		45		43	43	43		42			14
13	43		44		42		42				43		13
12			43	44		42	41	42	43		42	44	12
11	42	41		43	41		40			41		43	11
10	41					41		41	42		41	42	10
9		40	42	[illegible]	40		39	40					9
8	40	39	41			40	38		41	40	40		8
7			40		39	39		39	40			41	7
6	39	38		39-40	38	38	37	38	39	39	39		6
5	38	37	39	37-38	37	37	36	37	38	38	38	40	5
4	35-37	35-36	38	36	36	36	34-35	36	37	37	37		4
3	34	34	36-37	35	34-35	33-35	31-33	35	35-36	35-36	36	38-39	3
2	30-33	31-33	32-35	34	31-33	32	29-30	33-34	32-34	32-34	33-35	37	2
1	25-29	25-30	25-31	25-33	25-30	25-31	25-28	25-32	25-31	25-31	25-32	25-36	1

STANFORD ACHIEVEMENT TEST, HIGH SCHOOL BATTERY

Minnesota Norms

Forms W, X

Grade 12

STANDARD SCORE

Per-centile	Engl.	Num. Comp.	Mathematics		RDG	Science		Soc. Stud.	Spell.	Arts & Human	Bus & Econ.	Tech. Comp.	Per-centile
			Part A	Tot.		Part A	Tot.						
99	80-84	79-80	77-80	77-87	76-86	74-86	76-87	74-82	76-82	73-90	75-88	75-84	99
98	78-79	78	74-76	76	74-75	72-73	75	72-73	74-75		74	74	98
97	74-77	77	73	75	72-73	71	74	71	72-73	72	73	.	97
96	72-73	76	72	74	70-71	70	.	70	70-71	71	72	73	96
95	. . .	75	71	73	69	. . .	73	. . .	. . .	70	71	72	95
94	71	74		. . .	68	69	72	69	69	69	. . .	71	94
93	70	. . .	70	72	67	68	. . .	. . .	. . .	68	. . .	.	93
92	. . .	73	69	71	. . .	. . .	71	68	.	. . .	70	70	92
91	69	72	. . .	70	66	67	. . .	67	68	67		69	91
90	68	71		69			70	. . .		66	69		90
89	. . .		68	. . .	. . .	66	. . .	66	67	.	68	. . .	89
88	. . .	70	. . .	68			69	. . .	66	65		68	88
87		69	67	.	65	. . .	. . .		. . .	. . .			87
86	67	68	. . .	67	. . .	65	. . .	65					86
85			. . .	.		.	68	. . .	65	64	67	67	85
84			66	66	64	64	. . .			. . .			84
83	66	67	. . .		. . .	63	. . .	64	. . .	. . .		66	83
82		. . .	65	. . .	. . .		67			. . .		. . .	82
81	65	66	. . .	65	63			63	64	63	66		81
80		. . .	64		. .								80

79	..	..	..	..	..	..	66	..	..	..	..	65	79
78	64	65	..	..	..	62	..	..	..	..	65	..	78
77	..	..	..	64	62	..	..	62	63	62	..	..	77
76	..	..	63	..	..	..	65	..	..	..	64	64	76
75	63	64	..	..	..	..	..	..	..	..	..	..	75
74	..	..	..	63	..	61	..	..	..	..	63	63	74
73	..	..	62	..	..	..	..	..	62	61	..	..	73
72	..	63	..	62	61	..	..	61	..	..	..	62	72
71	62	..	..	..	..	60	64	..	..	60	..	..	71
70	..	62	61	..	..	..	..	..	..	..	..	61	70
69	61		..	61	..	59	..	60	61	..	62	..	69
68	..	61	..	..	60	..	..	..	..	..	..	..	68
67	..	..	..	..	..	..	..	..	..	59	..	60	67
66	..	60	60	60	..	..	63	..	60	..	..	..	66
65	60	..	..	..	59	58	..	59	..	..	..	..	65
64	..	..	..	..	..	..	..	..	59	..	61	59	64
63	..	..	59	59	..	..	62	..	..	58	..	..	63
62	59	59	..	..	58	..	..	58	..	..	..	..	62
61	..	..	..	..	..	..	..	..	..	..	..	..	61
60	..	..	..	..	57	57	61	..	58	57	..	58	60
59	..	58	58	..	..	..	..	..	..	..	..	..	59
58	..	..	..	58	..	..	..	57	..	..	60	..	58
57	58	..	..	..	56	..	60	..	..	56	..	..	57
56	..	..	57	..	..	..	..	..	57	..	..	57	56
55	..	..	..	57	..	56	..	56	..	..	..	..	55
54	..	57	56	..	..	..	59	..	..	..	..	..	54
53	..	..	..	..	55	..	..	..	..	55	59	..	53
52	57	56	..	56	..	..	..	..	56	..	..	..	52
51	..	..	..	..	..	55	..	55	..	..	..	56	51
50	..	55	55	..	..	..	..	..	..	..	..	..	50

STANFORD ACHIEVEMENT TEST, HIGH SCHOOL BATTERY

Minnesota Norms

Forms W, X

Grade 12
(Continued)

STANDARD SCORE

Percentile	Engl.	Num. Comp.	Mathematics		RDG	Science		Soc. Stud.	Spell.	Arts & Human	Bus &. Econ.	Tech. Comp.	Percentile
			Part A	Tot.		Part A	Tot.						
49	56	..	..	..	54	..	58	..	..	54	..	..	49
48	..	..	..	55	..	..	..	54	..	..	58	..	48
47	..	..	54	..	..	54	57	..	55	..	..	55	47
46	55	54	..	..	..	..	..	..	..	..	..	..	46
45	..	..	..	..	53	..	..	53	..	53	..	..	45
44	..	..	..	54	..	..	56	..	..	..	..	..	44
43	..	..	53	..	..	53	..	..	..	..	..	54	43
42	..	53	..	..	52	..	..	52	54	..	56-57	..	42
41	54	..	..	..	..	..	55	..	..	52	..	..	41
40	..	..	52	..	51	52	..	..	..	..	..	53	40
39	..	..	..	53	..	..	54	51	..	..	..	..	39
38	..	52	..	..	..	..	..	..	53	51	55	..	38
37	53	..	..	..	..	51	..	..	..	..	..	52	37
36	..	..	..	..	50	..	..	..	52	..	..	..	36
35	..	..	51	..	..	..	..	..	..	..	..	..	35
34	..	..	..	52	..	50	53	50	..	..	..	..	34
33	52	51	..	..	..	..	..	..	..	50	54	..	33
32	..	..	..	..	49	..	..	..	..	..	..	..	32
31	..	..	..	..	..	..	..	51	..	..	..	51	31
30	..	..	..	..	..	49	..	..	..	..	..	..	30

29	..	..	..	..	48	..	..	49	..	..	53	...	29
28	51	..	50	51	..	..	52	..	..	49	..	..	28
27	..	50	..	..	..	..	..	..	..	..	..	..	27
26	..	..	..	..	..	..	51	..	50	48	..	..	26
25	50	..	49	..	47	48	..	..	..	..	52	50	25
24	..	..	..	50	..	..	..	48	49	..	..	..	24
23	..	49	..	..	..	..	50	..	..	47	..	..	23
22	49	..	48	49	..	47	..	..	..	..	51	49	22
21	..	..	..	..	46	..	..	47	48	..	..	..	21
20	48	48	..	..	..	..	49	..	..	..	50	..	20
19	..	..	47	48	..	46	..	..	..	..	..	48	19
18	..	..	..	..	45	..	48	46	47	46	49	..	18
17	47	47	46	47	..	..	47	..	..	..	..	47	17
16	.	..	45	46	44	45	..	45	46	..	48	..	16
15	..	46	44	..	..	..	46	..	..	..	..	..	15
14	46	45	43	45	43	44	..	44	45	45	47	46	14
13	..	..	..	44	..	43	45	43	..	..	..	..	13
12	45	44	..	43	42	..	44	42	..	44	..	..	12
11	44	..	42	..	..	42	43	41	44	..	46	45	11
10	..	43	..	..	41	..	..	..	..	43	..	..	10
9	43	42	41	42	..	41	42	40	43	42	45	..	9
8	..	41	40	..	40	..	41	..	42	..	44	44	8
7	42	40	..	41	..	40	40	38-39	40-41	41	41-43	..	7
6	..	39	39	39-40	39	38-39	38-39	37	39	40	40	43	6
5	41	38	38	37-38	38	37	37	36	38	38-39	39	42	5
4	38-40	37	37	..	36-37	35-36	36	35	37	37	37-38	41	4
3	35-37	34-36	36	36	25	33-34	35	33-34	36	35-36	34-36	39-40	3
2	32-34	33	32-35	33-35	32-34	32	31-34	30-32	33-35	31-34	30-33	37-38	2
1	25-31	25-32	25-31	25-32	25-31	25-31	25-30	25-29	25-32	25-30	25-29	25-36	1

Standard Scores for Selected Percentiles for the
STANFORD ACHIEVEMENT TEST, HIGH SCHOOL BATTERY
Based on Minnesota State-Wide Norms (Revised 1968)

Males and Females Combined

Per-centile	Eng.	Num. Comp.	Math A	RDG	SCI A	Soc. Stud.	Spell.	Art & Hum.	Bus. & Econ.	Tech. Comp.	Per-centile
					GRADE 9						
10	34.0	37.0	39.0	35.0	34.0	35.7	36.5	35.0	33.7	38.7	10
25	42.3	42.0	45.2	39.8	40.3	41.7	41.7	41.0	38.8	43.5	25
50	47.7	48.5	49.8	68.0	46.4	47.2	47.6	46.3	44.5	49.2	50
75	53.3	53.3	53.7	52.0	52.3	51.7	54.3	51.3	49.6	54.2	75
90	58.0	59.0	57.7	56.5	57.5	57.0	59.0	58.0	54.0	58.5	90
					GRADE 10						
10	40.0	40.0	42.3	39.0	37.5	39.0	38.5	39.0	38.3	41.3	10
25	45.0	45.0	47.2	44.0	43.5	44.8	44.8	45.2	44.0	46.7	25
50	50.8	50.4	52.6	49.6	49.8	50.5	50.8	49.8	48.8	51.6	50
75	56.3	57.3	58.3	55.5	56.3	56.3	57.0	55.5	54.0	57.5	75
90	61.7	63.5	62.7	61.7	61.5	62.0	62.3	61.0	59.3	63.0	90
					GRADE 11						
10	41.0	40.5	42.3	40.5	41.0	41.0	42.0	40.7	41.0	42.0	10
25	47.3	47.0	48.3	46.3	46.7	47.0	47.3	44.8	47.7	48.0	25
50	53.8	52.4	55.0	52.5	53.0	52.7	53.3	50.4	53.3	54.5	50
75	59.7	59.0	61.6	59.0	59.3	58.7	59.0	57.0	59.0	59.3	75
90	65.3	66.0	67.0	64.7	64.5	64.0	64.0	63.0	65.5	66.0	90
					GRADE 12						
10	43.5	43.0	41.5	41.0	41.5	40.5	43.5	43.0	45.5	44.7	10
25	50.0	49.5	49.0	47.0	48.0	48.2	49.5	47.7	52.0	50.0	25
50	56.3	55.0	55.0	54.3	54.8	54.7	55.6	54.3	58.4	55.8	50
75	63.0	64.0	62.7	61.6	61.3	61.6	62.5	61.5	63.5	63.5	75
90	68.0	71.0	68.3	65.8	66.5	66.5	67.5	66.0	69.0	68.7	90

Minnesota State-Wide Norms for the
MINNESOTA ENGLISH TEST
1965-66

ELEVENTH GRADE
MALES AND FEMALES, COMBINED

These are the official norms used for MET in the Minnesota High School State-Wide Testing Program.

These norms are based on 1,009 juniors from fourteen Minnesota high schools selected from those which took MET the fall of 1965 as part of the Minnesota High School State-Wide Testing Program. Size of junior classes in these selected high schools ranged from 12 to 152. The Minnesota Scholastic Aptitude Test (MSAT) scores of the schools taking MET the fall of 1965 were carefully studied and the group selected to be representative of all Minnesota high school juniors. Studies of groups selected because they are representative of the entire state on MSAT have shown that we obtain norms reprsentative of the entire state on other tests. Because the fourteen schools are representative on MSAT, as shown below, we are quite confident they are also representative on MET.

Minnesota Scholastic Aptitude Test Data on Fourteen High Schools in MET Norms Group and for All Juniors

	Juniors from Fourteen Schools in MET Norms Group	All Juniors 1965-66
Number	1,009	61,919
Mean	34.7	34.7
Standard Deviation	14.1	14.7

For a further description of MET see: Swanson, Edward O., "The Minnesota English Test," *Student Counseling Bureau Bulletin and Occupational Newsletter*, 17:7-8, January, 1965.

Raw Score	Percentile Rank	Raw Score	Percentile Rank
58 +	99	35	60
57	98	34	57
56	97	33	53
54-55	96	32	49
53	95	31	44
52	94	30	39
51	93	29	35
50	92	28	32
49	90	27	28
48	89	26	24
47	88	25	21
46	87	24	18
45	85	23	15
44	83	22	12
43	80	21	9
42	78	20	7
41	76	19	5
40	74	18	4
39	71	17	3
38	69	15-16	2
37	66	1-14	1
36	63		

These norms were furnished through the courtesy of the Student Counseling Bureau, Office of the Dean of Students, University of Minnesota.

Norms for

MINNESOTA SCHOLASTIC APTITUDE TEST (MSAT)

Form C*

Norms: A. Entering freshmen to Minnesota colleges tested as high school juniors.**
B. All Minnesota juniors, tested Winter of 1969-70.***

Raw Score	Percentile A	Percentile B	Raw Score	Percentile A	Percentile B
75	99	99	38	56	68
74	99	99	37	54	66
73	99	99	36	52	64
72	99	99	35	49	61
71	99	99	34	46	59
70	99	99	33	42	56
69	99	99	32	39	54
68	99	99	31	36	51
67	99	99	30	32	48
66	99	99	29	29	45
65	99	99	28	26	43
64	99	99	27	23	40
63	98	99	26	21	37
62	98	98	25	18	34
61	97	98	24	16	31
60	96	97	23	15	28
59	95	97	22	13	25
58	94	96	21	11	22
57	93	96	20	9	20
56	92	95	19	8	17
55	91	94	18	6	14
54	90	93	17	5	12
53	89	92	16	4	9
52	88	91	15	3	7
51	86	90	14	3	6
50	84	89	13	2	4
49	82	88	12	2	3
48	80	86	11	1	2
47	78	85	10	1	1
46	76	84	9	1	1
45	73	82	8	1	1
44	71	80	7	1	1
43	69	79	6	1	1
42	66	77	5	1	1
41	63	75	4	1	1
40	61	73	3	1	1
39	59	71	2	1	1
			1	1	1

---

*MSAT, Form C, was first administered to all Minnesota high school juniors in 1966-67. It superceded MSAT, Form A, used with juniors 1957-58 to 1965-66.

**These are the "official" percentiles included on the reports sent to high schools and colleges. These norms are equated to the original MSAT, Form A, norms based on 3,401 entering freshmen to the University of Minnesota in the fall of 1959. Thus, these percentile ranks are equivalent to the MSAT percentile ranks which were reported from 1959-66.

***N = 65,830; Mean = 32.47; Standard Deviation = 13.19

Minnesota State-Wide Norms for
MINNESOTA SCHOLASTIC APTITUDE TEST (MSAT)
Freshmen Entering Various Types of Minnesota Colleges
Fall, 1968

MSAT

Percentile	Jr. Colleges	St. Colleges	Univ. of Minn. Four Yr. Coll.	Four Yr. Liberal Arts	Percentile
99	60-75	61-71	67-75	68-75	99
98	58-59	59-60	66	67	98
97	56-57	58	65	66	97
96	54-55	57	64	. .	96
95	53	56	. .	65	95
94	52	55	63	64	94
93	51	54	62	. .	93
92	50	53	. .	. .	92
91	. .	52	61	63	91
90	49	. .	. .	. .	90
89	48	51	60	62	89
88	. .	. .	. .	61	88
87	47	50	59	. .	87
86	46	. .	. .	. .	86
85	. .	49	58	60	85
84	45	48	. .	. .	84
83	. .	. .	57	59	83
82	44	47	. .	. .	82
81	. .	. .	56	. .	81
80	43	. .	. .	58	80
79	. .	46	55	. .	79
78	42	. .	. .	57	78
77	. .	45	. .	. .	77
76	41	. .	54	. .	76
75	. .	. .	. .	56	75
74	40	44	. .	. .	74
73	. .	. .	53	55	73
72	. .	. .	. .	. .	72
71	39	43	52	. .	71
70	. .	. .	. .	54	70
69	38	42	. .	. .	69
68	. .	. .	51	. .	68
67	. .	. .	. .	53	67
66	37	41	50	. .	66
65	. .	. .	. .	52	65
64	36	. .	. .	. .	64
63	. .	40	49	. .	63
62	. .	. .	. .	. .	62
61	35	. .	. .	51	61
60	. .	39	48	. .	60
59	. .	. .	. .	. .	59
58	34	. .	. .	50	58
57	. .	. .	47	. .	57
56	. .	38	. .	. .	56
55	. .	. .	. .	49	55
54	33	. .	. .	. .	54
53	. .	37	46	. .	53
52	. .	. .	. .	48	52
51	32	. .	. .	. .	51
50	. .	36	45	. .	50

Minnesota State-Wide Norms for

MINNESOTA SCHOLASTIC APTITUDE TEST (MSAT)

Entering Freshmen to Minnesota Colleges

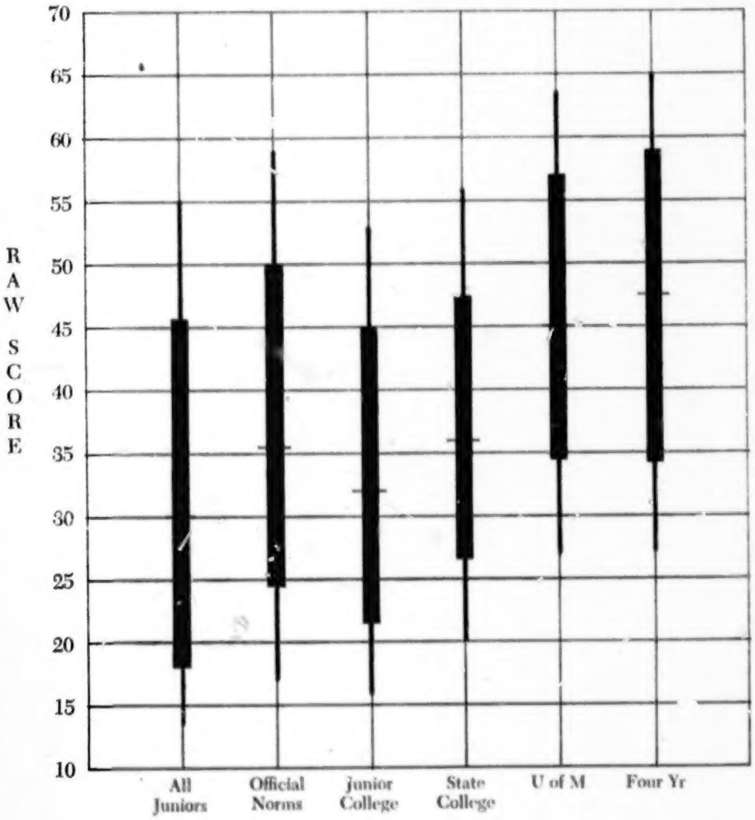
Fall, 1968

MSAT

Percentile	Jr. Colleges	St. Colleges	Univ. of Minn. Four Yr. Coll.	Four Yr. Liberal Arts	Percentile
49	..	..	..	47	49
48	..	..	..	..	48
47	31	..	..	..	47
46	..	35	44	46	46
45	..	..	..	..	45
44	..	..	..	..	44
43	30	..	43	45	43
42	..	34	..	..	42
41	..	..	..	..	41
40	29	..	42	44	40
39	.	..	..	..	39
38	..	33	..	..	38
37	..	.	..	43	37
36	28	..	41	..	36
35	..	32	..	..	35
34	..	..	..	42	34
33	27	..	40	..	33
32	..	31	..	41	32
31	..	..	..	..	31
30	26	..	39	..	30
29	..	..	..	40	29
28	..	30	..	..	28
27	..	..	38	..	27
26	25	..	..	39	26
25	..	29	..	..	25
24	..	..	..	38	24
23	24	..	37	..	23
22	..	28	..	..	22
21	23	..	..	37	21
20	..	..	36	..	20
19	..	27	..	36	19
18	22	..	35	..	18
17	..	..	..	35	17
16	..	26	..	..	16
15	21	..	34	34	15
14	..	..	..	..	14
13	..	25	33	33	13
12	20	..	..	..	12
11	..	24	32	32	11
10	19	..	..	31	10
9	..	23	31	..	9
8	18	..	30	30	8
7	..	22	29	29	7
6	17	21	28	28	6
5	16	20	27	27	5
4	15	19	26	26	4
3	14	18	24-25	24-25	3
2	13	16-17	20-23	21-23	2
1	1-12	5-15	1-19	1-20	1

MINNESOTA SCHOLASTIC APTITUDE TEST (MSAT)

Raw Scores Corresponding to the median, the middle two thirds (bold bar), and the middle 90% (light bar) for all Minnesota junior norms, the official entering college freshmen norms, and norms for freshmen entering various types of Minnesota Colleges in fall, 1968.



Minnesota State-Wide Norms for Entering Freshmen to Minnesota Colleges

Fall, 1968

HSR

Per-centile	Jr. Colleges	St. Colleges	Univ. of Minn. Four Yr. Coll.	Four Yr. Liberal Arts	Per-centile
99	96-99	98-99	99	99	99
98	94-95	97	..	..	98
97	93	96	..	..	97
96	91-92	95	..	..	96
95	90	94	..	..	95
94	89	..	98	..	94
93	88	93	..	..	93
92	87	92	97	..	92
91	85-86	91	..	98	91
90	84	..	..	..	90
89	83	90	96	..	89
88	82	89	..	..	88
87	81	88	95	97	87
86	80	..	..	..	86
85	79	87	..	..	85
84	78	86	94	96	84
83	77	..	..	..	83
82	76	85	93	..	82
81	75	..	..	95	81
80	74	84	..	..	80
79	..	83	92	..	79
78	73	..	..	94	78
77	72	82	..	..	77
76	71	81	91	..	76
75	70	..	..	93	75
74	69	80	90	..	74
73	68	79	..	..	73
72	..	78	..	..	72
71	67	..	89	92	71
70	66	77	..	..	70
69	65	76	88	91	69
68	64	..	..	..	68
67	..	75	..	..	67
66	63	74	87	90	66
65	62	..	..	..	65
64	61	73	86	89	64
63	60	72	..	..	63
62	59	..	85	88	62
61	58	71	..	..	61
60	..	70	84	..	60
59	57	..	..	87	59
58	56	69	..	..	58
57	55	68	83	86	57
56	54	..	..	..	56
55	53	67	82	85	55
54	..	66	..	..	54
53	52	..	81	..	53
52	51	65	..	84	52
51	50	64	80	..	51
50	49	64	..	83	50

Minnesota State-Wide Norms for Entering Freshmen to Minnesota Colleges

Fall, 1968

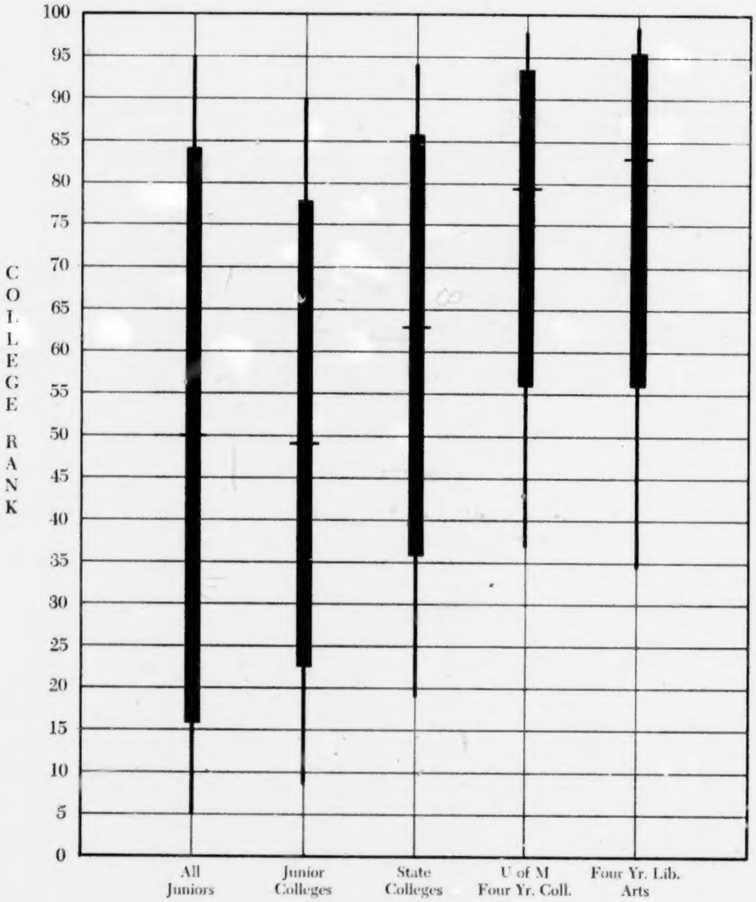
(Continued)

HSR

Per-centile	Jr. Colleges	St. Colleges	Univ. of Minn. Four Yr. Coll.	Four Yr. Liberal Arts	Per-centile
49	43	..	79	..	49
48	..	62	..	82	48
47	47	61	78	..	47
46	46	..	..	81	46
45	..	60	..	..	45
44	45	59	76	80	44
43	44	..	..	..	43
42	43	58	75	79	42
41	..	57	..	78	41
40	42	56	..	..	40
39	41	..	..	77	39
38	40	55	73	..	38
37	..	54	72	76	37
36	39	..	..	75	36
35	38	53	..	..	35
34	37	52	70	74	34
33	36	51	..	73	33
32	..	50	69	72	32
31	35	..	..	..	31
30	34	49	..	71	30
29	33	48	67	70	29
28	32	47	66	69	28
27	..	46	..	68	27
26	31	45	65	67	26
25	30	44	..	66	25
24	29	43	63	..	24
23	28	42	62	64-65	23
22	27	..	..	63	22
21	26	41	61	62	21
20	25	40	..	..	20
19	24	39	59	61	19
18	23	38	58	59-60	18
17	..	37	57	58	17
16	22	36	56	57	16
15	21	35	..	56	15
14	20	33-34	..	54-55	14
13	19	32	52	52-53	13
12	17-18	31	51	51	12
11	16	30	49-50	49-50	11
10	15	28-29	..	47-48	10
9	14	26-27	46-47	46	9
8	13	25	44-45	44-45	8
7	12	23-24	42-43	40-43	7
6	10-11	21-22	39-41	37-39	6
5	8-9	18-20	36-38	33-36	5
4	7	15-17	32-35	29-32	4
3	5-6	12-14	26-31	24-28	3
2	3-4	8-11	18-25	16-23	2
1	1-2	1-7	1-17	1-15	1

HIGH SCHOOL PERCENTILE RANKS (HSR)

HSR's corresponding to the percentiles for the median, the middle two-thirds (bold bar), and the middle 90% (light bar) for freshmen entering various types of Minnesota Colleges in fall, 1968
(With all Minnesota Juniors included for comparison)



GENERAL APTITUDE TEST BATTERY (GATB)
and
MINNESOTA VOCATIONAL INTEREST INVENTORY (MVII)

Norms for the Curriculum or Occupational (Training) Areas in Minnesota Area Vocational-Technical Schools

The GATB and MVII norms on the following pages were furnished by Dr. David Pucel and Dr. Howard F. Nelson of the Department of Industrial Education, University of Minnesota. The norms were generated as a part of their Project MINI-SCORE* (Minnesota Student Characteristics and Occupationally Related Education).

All of the 17,500 applicants to the full-time, day trade programs conducted in the Area Vocational-Technical Schools of Minnesota during the period from September, 1966 to October, 1968 took the paper and pencil portions of the GATB as part of an extensive battery used in the Project MINI-SCORE research.

In Project MINI-SCORE the training courses offered in Minnesota Area Vocational-Technical Schools were grouped into 63 relatively homogeneous groupings by personnel from the Minnesota State Department of Vocational Education and the Department of Industrial Education at the University of Minnesota. Presently, GATB, B-1002, Form B, training norms have been developed for 27 of these groups which attract a large proportion of students. Norms for additional training groups are being prepared and will be included as they become available. The 27 current training groups have been put into two clusters as follows:

Cluster I

- Air Conditioning, Refrigeration and Appliance Repair
- Aircraft Mechanics
- Agri-Technology
- Architectural Drafting
- Automotives
- Diesel Mechanics
- Electronics
- Carpentry
- Farm Equipment Mechanics
- Fluid Power Technology
- Machine Shop

Cluster II

- Accounting
- Chefs and Cooks
- Clerical Training
- Cosmetology
- Data Processing
- Dental Assistant
- Interior Design and Sales Assistant
- Medical Laboratory Assistant
- Practical Nursing
- Sales
- Secretarial Training

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*Project MINI-SCORE (Minnesota Student Characteristics and Occupationally Related Education) is supported by a grant from the Division of Comprehensive and Vocational Research, Office of Education, U.S. Department of Health, Education, and Welfare under the formal title "The Characteristics of Full-time Students in Post Secondary Trade Schools." Project No. HRD 5-0148.

Cluster I — Continued

Mechanical Drafting and Design
Plumbing and Sheetmetal
Power and Home Electricity
Printing and Graphic Arts
Welding

Cluster II — Continued

The specific courses which are included in each of these 27 area are listed on the following pages.

Notice that Cluster I contains occupations usually referred to as trade or technical occupations which attract predominantly males. Cluster II contains occupations related to business and social service and tend to enroll mostly females or both males and females.

> The norm groups for the 27 Training Area are made up of students who *successfully completed courses in the particular training programs.* While these are important and useful norm groups, it is important to remember that success in training does not necessarily mean success on the job. Project MINI-SCORE is assembling follow-up data to examine the relationship between test scores and job success and satisfaction. These data will be available soon and will be published as a supplement to this book. Until they are available, however, counselors and students should keep in mind the distinction between training-success and job-related norms.

Project MINI-SCORE used only the written portions of GATB in its test battery.

The omission of the GATB manipulative performance tests from the Project MINI-SCORE Battery means that data relating scores from these tests to training experience in Minnesota Area Vocational-Technical Schools and to subsequent job experience are not available or forthcoming.

Counselors may encounter students whose other scores or tentative vocational plans would make the manipulative scores useful, however. Many Minnesota counselors who have completed Employment Service GATB training programs and who are certified to administer GATB will want to administer the manipulative tests to such students. Schools who do not have a personnel with this training may be able to send selected students to their local Employment Service Office to have the tests administered.

AREA VOCATIONAL-TECHNICAL SCHOOL TRAINING AREAS

The 27 training areas for which CATB norms are available are listed below.

1. AIR CONDITIONING, REFRIGERATION AND APPLIANCE REPAIR
2. AIRCRAFT MECHANICS
3. AGRI-TECHNOLOGY
   - Agri-Chemicals and Fertilizers, Sales and Service
   - Agricultural Technician (Animal Science)
   - Agriculture Technician (Plant Science)
   - Agricultural Sales Technician
4. ARCHITECTURAL DRAFTING
5. AUTOMOTIVES
   - Auto Mechanic
   - Auto Body Repair
   - Automobile Management
   - Automobile Technician
6. DIESEL MECHANICS
   - Diesel Mechanics
   - Diesel Mechanics Technicians
   - Truck and Diesel Mechanics
7. ELECTRONICS
   - Electronics
   - Electronics, Communications
   - Electronics, Computer Maintenance
   - Electronics, Industrial and Home Entertainment Service
   - Electronics, Industrial Technical
   - Electronics, Radio and Television
   - Electronics, Technician Communications
   - Electronics, Technician Industrial
   - Electronics, Technician
   - Electronics, Technology
8. CARPENTRY
   - Building Construction
   - Carpentry
9. FARM EQUIPMENT MECHANICS
   - Farm Equipment Mechanics
   - Farm Mechanics
10. FLUID POWER TECHNOLOGY

11. MACHINE SHOP
    - Machine Operator
    - Machinist
    - Production Machinist
12. MECHANICAL DRAFTING AND DESIGN
    - Engineering Drafting
    - Industrial Drafting
    - Industrial Drafting Technology
    - Machine Drafting
    - Technical Drafting
    - Design Technology
    - Drafting and Design Technology
13. PLUMBING AND SHEETMETAL
14. POWER AND HOME ELECTRICITY
    - Electrical
    - Electrical, Construction
    - Electrical, Maintenance
    - Electrical, Technology
    - Lineman Electrician
    - Power Plant Operation
15. PRINTING AND GRAPHIC ARTS
    - Graphic Arts
    - Photolithography and off-set printing
    - Offset Printing
16. WELDING
17. ACCOUNTING
18. CHEFS AND COOKS
    - Chef
    - Cook, Institutional
    - Hotel and Restaurant Cooking
19. CLERICAL TRAINING
    - Clerical Record Keeping
    - Clerk, General Office
    - Clerk-Typist
    - Clerk-Typist Machine Operator
20. COSMETOLOGY
21. DATA PROCESSING
    - Clerical Training and Data Processing
    - Clerical Training and Key Punch
    - Tabulating Machine Operator

22. DENTAL ASSISTANT

23. INTERIOR DESIGN AND SALES ASSISTANT

24. MEDICAL LABORATORY ASSISTANT

25. PRACTICAL NURSING

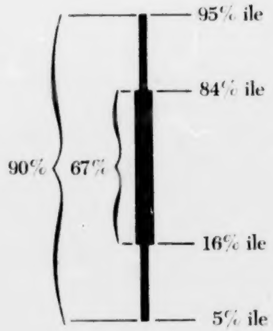
26. SALES
    - Sales Management
    - Sales and Marketing
    - Sales Training

27. SECRETARIAL TRAINING
    - Educational Secretary
    - Hospital Station Secretary
    - Secretarial Training, General
    - Secretarial Training, Medical
    - Stenographic Training
    - Medical Office Assistant
    - Medical Office Service
    - Legal Secretary

GENERAL APTITUDE TEST BATTERY (GATB)

Project MINI-SCORE Training Success Norms
for
Minnesota Area Vocational-Technical Schools*

Description of the Profiles



The Aptitude Score Scale is plotted along the left side of each page. A bar for each of the seven aptitude scores represents the range of scores for *students who have successfully completed courses in that area.* The bold part of the bar represents the range of scores for the middle two-thirds of these students. The light portion of the bar represents the middle 90 per cent of the group. That is, 90 per cent of the students in the Project Mini-Score research who successfully completed courses in a particular area had GATB Aptitude scores which fell between the top and bottom ends of the light bars, and two-thirds of the students had Aptitude scores which fell between the top and bottom of the bold portion of the bars.

The seven GATB Aptitudes for which Minnesota Norms are available are as follows:

Aptitude G – General Learning Ability (Intelligence)
The ability to "catch on" or understand instructions and underlying principles and the ability to reason and make judgments.

Aptitude V – Verbal Aptitude
The ability to understand the meaning of words and the ideas they stand for, and to use them effectively.

Aptitude N – Numerical Aptitude
Ability to perform arithmetic operations quickly and accurately.

Aptitude S – Spatial Aptitude
Ability to think visually of geometric forms and to comprehend the two-dimensional representation of three-dimensional objects.

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*Please refer to Page 101 for a discussion of the Project MINI-SCORE Project and a description of the norm groups.

Aptitude P – Form Perception

Ability to perceive pertinent detail in objects in pictorial or graphic material.

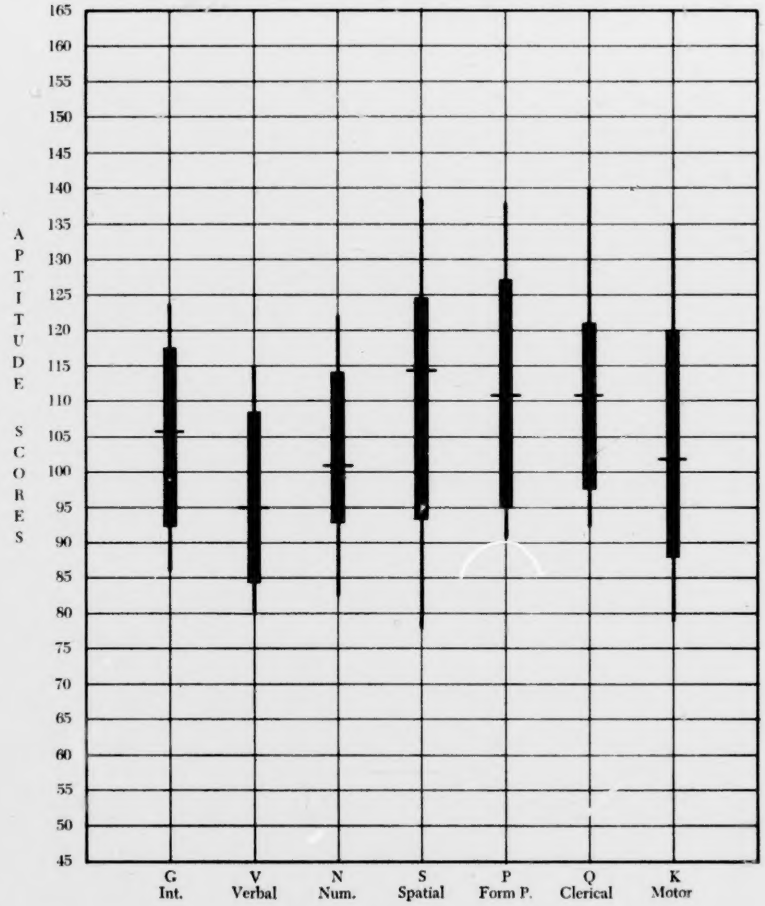
Aptitude Q – Clerical Perception

Ability to perceive pertinent detail in verbal or tabular material.

Aptitude K – Motor Coordination

Ability to coordinate eyes and hands or fingers rapidly and accurately in making precise movements with speed.

Air Conditioning, Refrigeration and Appliance Repair



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

AIR CONDITIONING, REFRIGERATION AND APPLIANCE REPAIR

Percentile	G	V	N	S	P	Q	K	Percentile
99	132	129	134	153	144	148	155	99
98	127-131	120-128	133	151-152	141-143	143-147	150-154	98
97	..	119	132	150	140	..	149	97
96	126	116-118	124-131	140-149	139	142	138-148	96
95	122-125	115	121-123	138-139	138	140-141	133-137	95
94	121	..	120	137	137	139	..	94
93	..	112-114	119	134-136	..	..	132	93
92	120	..	118	133	136	138	..	92
91	..	..	..	131-132	..	129-137	129-131	91
90	119	111	117	..	135	128	128	90
89	..	..	..	130	132-134	126-127	125-127	89
88	..	..	116	..	131	125	124	88
87	..	110	115	125-129	130	123-124	122-123	87
86	118	..	..	..	129	..	121	86
85	..	109	..	..	..	122	..	85
84	..	..	114	..	128	..	..	84
83	..	..	..	..	127	..	..	83
82	..	..	..	..	..	120-121	120	82
81	117	108	..	..	126	..	..	81
80	..	107	..	..	125	..	..	80
79	116	106	113	124	124	119	119	79
78	115	..	..	..	..	..	118	78
77	..	105	112	..	123	..	116-117	66
76	..	..	111	..	..	..	..	76
75	114	104	110	..	..	..	115	75
74	..	..	..	..	..	118	..	74
73	113	103	..	..	122	116-117	114	73
72	112	..	109	..	..	..	..	72
71	111	..	..	..	121	..	..	71
70	..	102	108	121-123	..	115	113	70
69	..	..	..	..	120	..	..	69
68	..	..	..	..	118-119	..	..	68
67	..	..	107	120	..	..	..	67
66	110	101	..	..	..	..	112	77
65	..	..	..	..	117	..	..	65
64	..	100	106	118-119	..	..	111	64
63	..	..	..	..	..	114	..	63
62	..	99	105	..	116	..	109-110	62
61	109	98	..	..	115	..	108	61
60	..	..	..	..	114	..	..	60
59	..	97	104	..	..	113	107	59
58	..	..	..	117	..	..	..	58
57	..	..	103	..	113	..	106	57
56	..	..	..	..	..	..	..	56
55	107	..	102	..	..	..	..	55
54	..	96	..	..	112	112	105	54
53	..	..	..	..	..	..	..	53
52	..	..	..	115-116	..	..	104	52
51	..	..	..	..	..	..	103	51
50	106	95	101	..	..	111	102	50

GENERAL APTITUDE TEST BATTERY

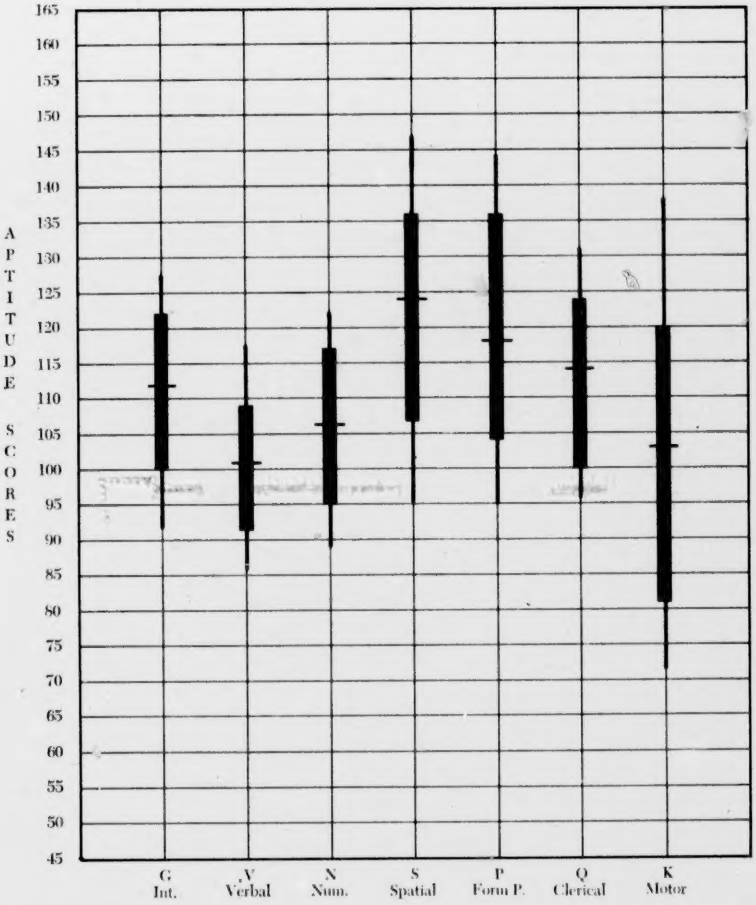
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

AIR CONDITIONING, REFRIGERATION AND APPLIANCE REPAIR

(Continued)

Percentile	G	V	N	S	P	Q	K	Percentile
49	..	..	..	..	111	110	..	49
48	105	..	..	114	..	109	..	48
47	..	..	..	..	..	..	..	47
46	104	94	..	..	110	108	..	46
45	101-103	..	..	111-113	..	..	..	45
44	..	..	..	..	109	..	..	44
43	..	93	100	..	108	..	101	43
42	100	..	..	..	..	107	..	42
41	..	..	..	..	..	..	..	41
40	..	..	99	..	..	..	..	40
39	..	92	..	110	..	106	..	39
38	..	..	..	..	107	..	..	38
37	..	..	98	..	..	105	..	37
36	99	91	..	..	..	..	100	36
35	..	..	..	..	..	..	..	35
34	..	90	..	108-109	106	..	99	34
33	..	..	..	107	..	104	..	33
32	..	89	97	105-106	105	..	98	32
31	..	..	..	..	..	..	..	31
30	98	..	..	..	..	102-103	97	30
29	..	..	..	104	104	101	96	29
28	97	88	96	..	..	100	95	28
27	96	..	95	102-103	..	..	94	27
26	95	..	..	..	103	..	93	26
25	..	..	..	101	..	99	92	25
24	..	..	..	..	..	..	..	24
23	94	87	94	98-100	102	..	91	23
22	..	..	..	..	..	..	..	22
21	..	86	..	97	100-101	..	90	21
20	..	..	..	95-96	99	98	89	20
19	93	..	..	..	..	..	..	19
18	..	85	..	94	96-98	..	88	18
17	..	..	93	..	95	..	..	17
16	..	84	..	92-93	..	..	..	16
15	..	..	..	..	..	97	..	15
14	92	83	..	..	..	..	87	14
13	..	..	92	91	94	..	..	13
12	91	..	91	..	..	96	..	12
11	90	82	..	89-90	..	..	..	11
10	..	..	90	..	..	..	..	10
9	89	..	86-89	88	93	95	86	9
8	..	..	85	..	..	..	..	8
7	88	81	84	79-87	..	94	81-85	7
6	87	..	83	..	92	..	80	6
5	86	80	..	..	91	92-93	79	5
4	71-85	75-79	78-82	78	87-90	91	63-78	4
3	70	74	77	..	86	90	62	3
2	68-69	71-73	58-76	66-77	..	88-89	59-61	2
1	67	70	57	65	85	87	58	1
	N=56 M=104.18 SD=12.88	N=56 M= 95.93 SD=11.72	N=56 M=102.14 SD=12.90	N=56 M=111.77 SD=17.51	N=56 M=112.23 SD=14.46	N=56 M=110.70 SD=13.62	N=56 M=104.80 SD=18.27	

Aircraft Mechanics



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for
Minnesota Area Vocational Technical Schools

AIRCRAFT MECHANICS

Percentile	G	V	N	S	P	Q	K	Percentile
99	135-138	123-133	129-134	153-156	150-156	135-152	159-163	99
98	131-134	121-122	128	151-152	147-149	..	149-158	98
97	130	119-120	126-127	150	146	134	141-148	97
96	129	118	124-125	148-149	144-145	..	140	96
95	127-128	..	123	147	..	129-133	137-139	95
94	126	117	122	144-146	143	128	136	94
93	..		..	..		127	..	93
92	125		121	143	142	..	135	92
91	..	116		..	140-141	126	134	91
90	..	115	120	141-142	139	..	..	90
89	124	..	119	140	..	..	130-133	89
88	..	112-114	..	138-139	138	..	126-129	88
87	..	111	..	..	137	..	124-125	87
86	123	..	118	137	..	125	122-123	86
85	..	110	..	..	136	..	121	85
84	..	..	..	..	..	124	120	84
83	122	109	..	134-136	135	123	119	83
82	..	..	117	133	134	..	..	82
81	121	..	..	131-132	..	..	118	81
80	..	..	..	..	..	122	..	80
79	..	..	..	..	133	121	117	79
78	120	..	116	..	..	..	116	78
77	..	..	..	..	132	120	..	77
76	..	..	..	..	..	..	115	76
75	..	108	..	130	131	..	114	75
74	..	..	115	..	..	..	..	74
73	119	..	..	..	130	..	..	73
72	..	..	..	..	..	119	113	72
71	..	107	..	..	129	..	..	71
70	..	..	114	..	..	..	112	70
69	..	106	112-113	128-129	128	..	..	69
68	118	..	..	..	..	..	..	68
67	..	105	111	..	127	118	111	67
66	..	..	..	..	..	..	..	66
65	..	..	..	..	126	..	110	65
64	117	104	110	..	..	116-117	109	64
63	..		..	127	..	..	..	63
62	116	..	..	..	..	..	108	62
61	..	..	..	..	125	..	..	61
60	..	103	..	..	..	..	..	60
59	115	..	109	..	..	115	107	59
58	..	..	..	..	124	..	..	58
57	..	..	..	..	123	..	..	57
56	114	..	..	125-126	122	..	106	56
55	..	..	..	..	..	..	..	55
54	113	102	108	..	121	..	105	54
53	..	..	..	..	120	..	..	53
52	..	..	..	..	119	..	104	52
51	..	..	107	..	..	114	..	51
50	112	..	..	..	118	..	103	50

GENERAL APTITUDE TEST BATTERY

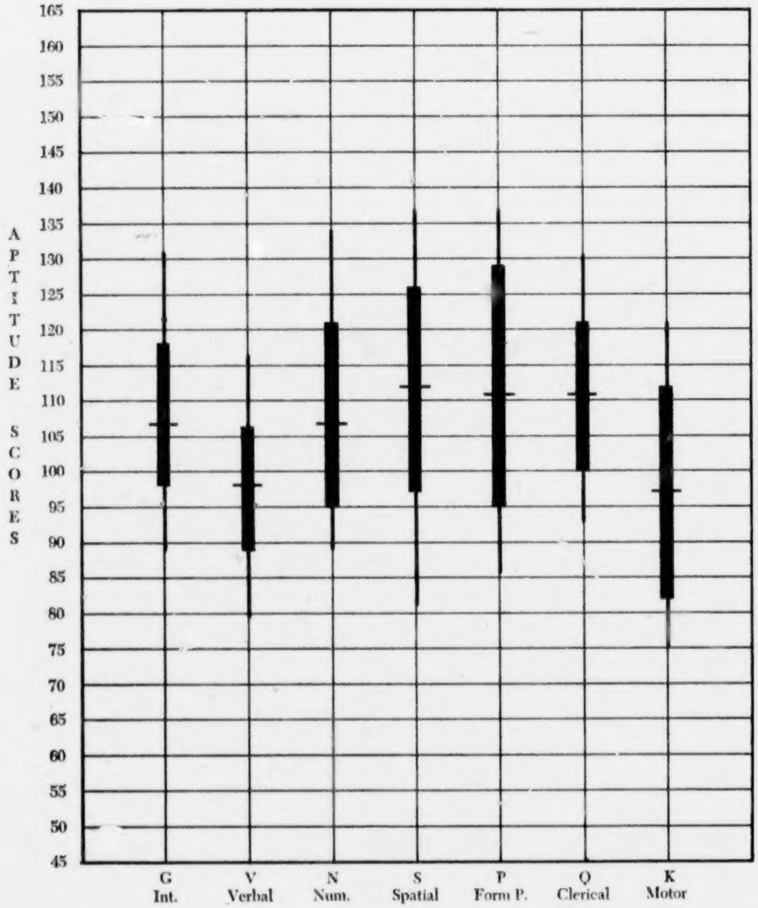
Project Mini-Score Training Norms for Minnesota Area Vocational Technical Schools

AIRCRAFT MECHANICS

(Continued)

Percentile	G	V	N	S	P	Q	K	Percentile
49	..	101	106	124	..	..	102	49
48	..	..	..	..	117	113	..	48
47	..	..	105	..	..	..	..	47
46	111	..	..	..	..	..	101	46
45	..	..	104	..	..	..	..	45
44	..	..	..	..	116	..	100	44
43	..	..	..	..	..	112	99	43
42	..	100	103	..	..	..	98	42
41	110	..	..	121-123	..	111	96-97	41
40	..	..	..	..	..	110	..	40
39	..	..	102	..	115	..	..	39
38	..	..	..	..	..	..	95	38
37	..	..	..	..	114	..	..	37
36	109	99	101	120	..	109	94	36
35	..	..	..	..	..	..	..	35
34	108	98	100	..	113	..	..	34
33	107	..	..	..	..	..	93	33
32	..	97	..	118-119	112	108	..	32
31	..	..	..	..	111	..	92	31
30	106	96	..	117	110	..	..	30
29	..	..	99	..	..	107	91	29
28	..	95	..	..	109	..	..	28
27	105	..	..	115-116	108	106	..	27
26	..	..	..	..	..	105	90	26
25	..	..	..	..	..	..	89	25
24	104	..	..	114	107	104	87-88	24
23	..	94	98	..	..	..	..	23
22	103	..	..	..	..	102-103	..	22
21	..	..	97	111-113	106	101	86	21
20	102	..	..	110	..	..	..	20
19	..	..	96	..	105	..	85	19
18	101	93	..	108-109	..	..	84	18
17	..	91-92	..	107	104	100	81-83	17
16	99-100	..	95	..	103	..	..	16
15	98	..	..	105-106	101-102	..	80	15
14	..	..	..	102-104	..	99	79	14
13	..	90	94	..	100	..	77-78	13
12	97	..	93	..	..	..	..	12
11	..	..	..	101	..	98	76	11
10	..	89	92	..	99	..	75	10
9	96	..	91	..	..	..	74	9
8	..	88	..	98-100	98	..	73	8
7	94-95	87	90	..	97	97	..	7
6	93	..	..	97	96	..	72	6
5	92	86	89	95-96	95	95-96	..	5
4	91	85	85-88	..	93-94	92-94	71	4
3	88-90	84	78-84	94	92	91	70	3
2	87	83	77	92-93	91	90	67-69	2
1	86	82	75-76	78-91	76-90	81-89	60-66	1
	N=103 M=111.52 SD=10.88	N=103 M=101.41 SD= 9.61	N=103 M=105.92 SD=11.48	N=103 M=122.26 SD=14.60	N=103 M=119.20 SD=15.40	N=103 M=112.55 SD=11.49	N=103 M=102.71 SD=20.46	

Agri-Technology



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

AGRI-TECHNOLOGY

Percentile	G	V	N	S	P	Q	K	Percentile
99	135-137	123-129	141-143	144-153	147-163	136-146	132-142	99
98	134	121-122	140	143	145-146	135	124-131	98
97	132-133	119-120	136-139	138-142	139-144	133-134	122-123	97
96	..	118	135	..	138	132	121	96
95	130-131	116-117	134	137	137	130-131	..	95
94	..	115	133	..	136	129	120	94
93	129	112-114	127-132	133-136	135	126-128	119	93
92	..	111	124-126	131-132	134	125	118	92
91	128	109-110	..	..	133	..	117	91
90	125-127	..	123	130	..	..	115-116	90
89	124	..	..	..	132	124	114	89
88	..	..	122	128-129	..	..	..	88
87	123	108	..	..	131	123	113	87
86	119-122	..	..	..	130	122	..	86
85	118	..	121	127	..	..	112	85
84	..	107	..	..	..	121	..	84
83	..	..	119-120	..	129	120	111	83
82	117	106	118	125-126	128	..	..	82
81	..	..	..	..	..	..	..	81
80	..	..	117	..	127	..	110	80
79	..	105	116	..	..	..	..	79
78	116	..	..	..	..	119	..	78
77	..	..	..	..	..	..	109	77
76	..	104	115	..	126	..	..	76
75	..	..	..	..	..	..	..	75
74	115	..	..	124	125	..	108	74
73	..	..	114	..	..	118	107	73
72	114	103	..	..	124	..	..	72
71	..	..	..	..	..	..	106	71
70	113	..	113	..	123	115-117	..	70
69	..	102	..	..	122	..	105	69
68	112	..	..	..	..	..	..	68
67	..	..	..	..	121	..	..	67
66	..	101	112	121-123	119-120	..	104	66
65	111	..	..	..	..	114	..	65
64	..	..	..	..	118	..	..	64
63	..	100	111	..	..	..	103	63
62	..	..	..	120	..	..	..	62
61	110	..	..	..	117	..	102	61
60	..	99	110	..	115-116	..	..	60
59	..	..	..	..	..	113	..	59
58	109	..	109	118-119	114	..	101	58
57	..	..	..	..	..	..	..	57
56	..	..	108	117	..	..	..	56
55	..	98	..	..	113	..	100	55
54	108	..	..	..	..	..	..	54
53	..	..	..	115-116	..	112	99	53
52	..	..	..	..	112	..	..	52
51	107	..	107	114	..	..	98	51
50	..	97	..	111-113	..	111	97	50

GENERAL APTITUDE TEST BATTERY

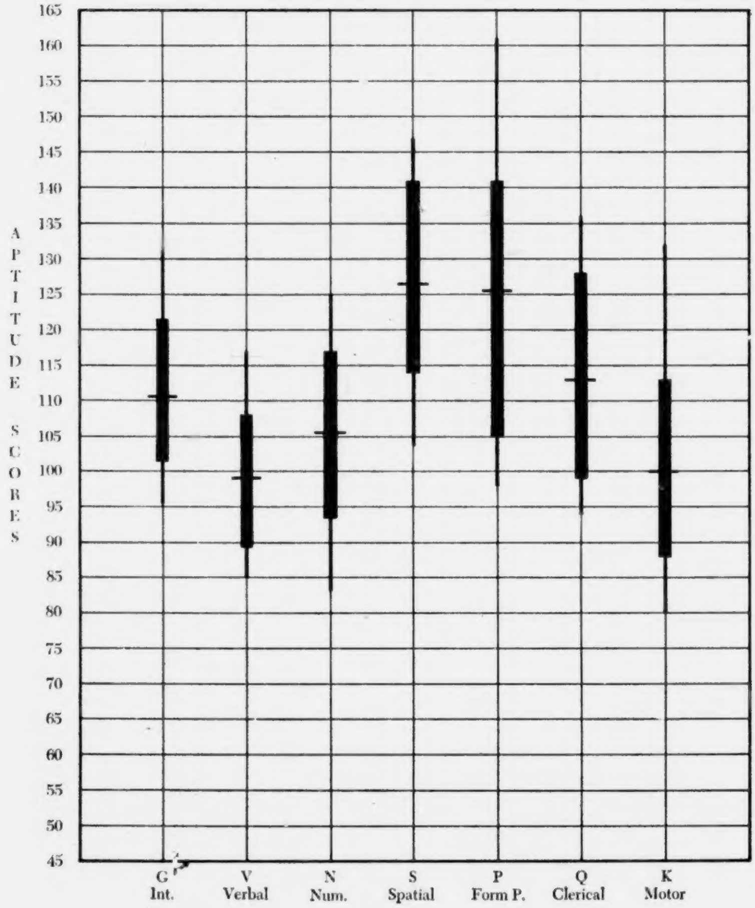
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

AGRI-TECHNOLOGY

(Continued)

Percentile	G	V	N	S	P	Q	K	Percentile
49	..	..	..	..	111	110	..	49
48	106	..	..	..	..	..	96	48
47	..	..	106	..	..	..	95	47
46	..	..	..	..	110	..	..	46
45	105	96	..	110	..	..	94	45
44	..	..	105	..	..	..	..	44
43	..	..	104	..	109	109	93	43
42	..	..	..	..	108	..	..	42
41	..	95	..	..	..	..	92	41
40	104	..	..	108-109	107	..	..	40
39	..	..	..	..	..	..	..	39
38	..	..	..	107	106	108	..	38
37	..	..	103	..	..	..	91	37
36	103	..	..	105-106	..	..	..	36
35	..	..	..	..	105	107	..	35
34	102	94	..	..	..	106	..	34
33	..	..	..	104	104	..	90	33
32	101	..	..	..	..	105	89	32
31	..	..	102	102-103	103	..	..	31
30	..	..	101	..	102	..	88	30
29	..	..	..	..	..	..	..	29
28	..	..	..	..	101	104	87	28
27	100	93	100	101	..	..	..	27
26	..	..	..	..	100	102-103	..	26
25	..	..	99	..	..	..	..	25
24	..	92	..	..	99	101	86	24
23	..	..	98	98-100	..	..	85	23
22	..	..	..	..	..	..	..	22
21	99	91	..	..	98	..	..	21
20	..	..	97	..	..	..	84	20
19	..	90	..	..	96-97	..	..	19
18	..	..	..	97	..	100	..	18
17	98	89	96	..	95	..	83	17
16	..	..	95	..	..	..	..	16
15	..	..	..	..	94	..	..	15
14	97	88	..	95-96	93	..	..	14
13	..	..	..	94	92	99	81	13
12	96	86-87	94	91-93	..	98	..	12
11	94-95	85	..	89-90	91	..	80	11
10	93	83-84	..	88	90	..	..	10
9	92	..	93	..	..	..	79	9
8	91	82	..	85-87	89	97	77-78	8
7	90	81	92	84	88	..	76	7
6	..	80	91	82-83	87	94-96	..	6
5	89	..	88-90	81	85-86	93	75	5
4	..	79	86-87	..	84	92	74	4
3	88	78	84-85	78-80	82-83	91	67-73	3
2	87	77	82-83	75-77	81	90	63-66	2
1	71-86	66-76	80-81	71-74	77-80	75-89	53-62	1
	N=115 M=107.71 SD=11.96	N=115 M=97.54 SD=10.31	N=115 M=107.74 SD=12.66	N=115 M=111.77 SD=16.40	N=115 M=111.98 SD=16.53	N=115 M=110.65 SD=11.24	N=115 M= 97.07 SD=14.93	

Architectural Drafting



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

ARCHITECTURAL DRAFTING

Percentile	G	V	N	S	P	Q	K	Percentile
99	136	135	..	153	178	178	142	99
98	135	12[illegible]134	132	148-152	171-177	145-177	137-141	98
97	134	121	..	..	170	144	136	97
96	132-133	118-120	126-131	..	162-169	136-143	133-135	96
95	131	117	125	..	161	..	132	95
94	130	116	124	147	158-160	..	125-131	94
93	129	..	123	..	157	135	124	93
92	127-128	115	122	..	148-156	..	122-123	92
91	124-126	..	121	144-146	..	..	121	91
90	..	..	120	..	147	134	120	90
89	123	112-114	..	..	146	130-133	119	89
88	..	..	119	143	145	..	118	88
87	..	111	..	..	144	..	116-117	87
86	..	..	118	..	143	129	115	86
85	122	109-110	..	141-142	142	..	114	85
84	..	108	..	..	141	..	..	84
83	..	107	..	..	140	125-128	113	83
82	..	..	117	..	139	..	..	82
81	121	..	..	140	..	124	112	81
80	..	106	..	..	138	..	..	80
79	..	..	116	..	..	..	..	79
78	..	..	..	..	..	..	..	78
77	120	105	115	138-139	..	123	..	77
76	..	..	..	..	137	..	111	76
75	119	..	113-114	137	..	..	..	75
74	118	..	112	134-136	..	122	..	74
73	..	..	..	..	136	..	..	73
72	116-117	..	..	..	135	121	110	72
71	..	104	..	133	134	..	..	71
70	115	..	111	..	..	120	..	70
69	..	..	..	..	..	..	109	69
68	..	..	..	131-132	133	..	..	68
67	..	..	..	..	..	119	..	67
66	..	..	110	..	..	..	106-108	66
65	..	..	..	..	132	..	..	65
64	114	103	..	..	..	118	..	64
63	..	..	..	130	..	..	..	63
62	..	..	..	..	131	116-117	105	62
61	..	..	109	..	..	..	..	61
60	113	102	..	..	130	..	..	60
59	..	..	..	..	..	115	..	59
58	112	..	..	128-129	129	..	103-104	58
57	..	101	..	..	..	..	102	57
56	..	..	108	..	..	..	..	56
55	..	..	..	..	128	..	..	55
54	..	..	..	..	..	114	..	54
53	111	100	107	127	..	..	101	53
52	..	..	..	..	127	..	..	52
51	..	..	106	..	126	..	..	51
50	..	..	..	..	..	..	..	50

GENERAL APTITUDE TEST BATTERY

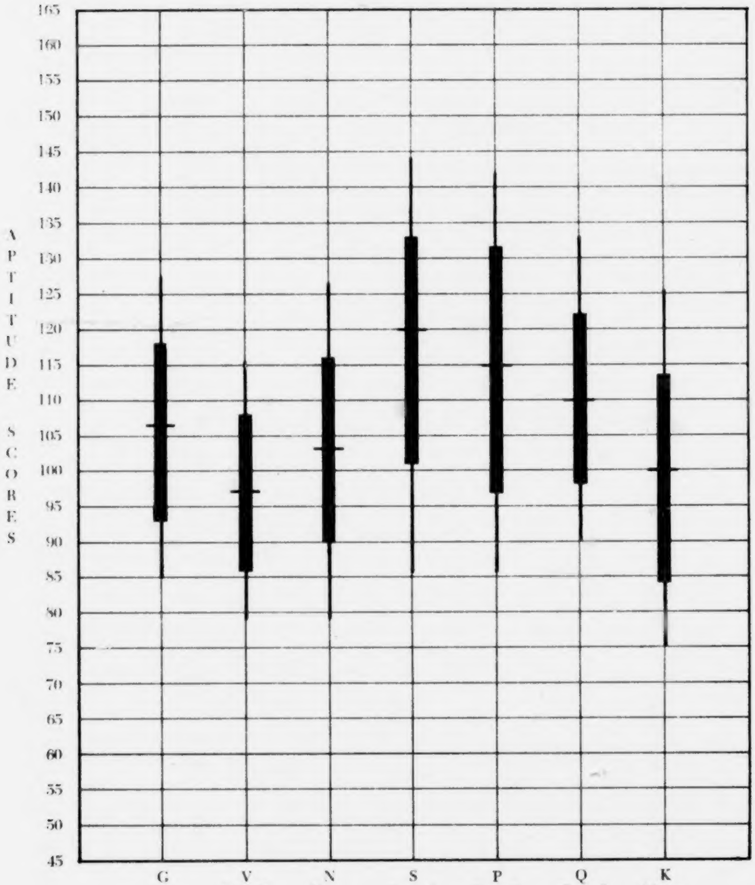
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

ARCHITECTURAL DRAFTING

(Continued)

Percentile	G	V	N	S	P	Q	K	Percentile
49	..	99	..	..	125	..	100	49
48	..	..	..	..	..	113	99	48
47	110	..	105	125-126	..	..	98	47
46	..	98	..	..	..	..	..	46
45	..	..	..	..	124	..	97	45
44	..	..	..	..	..	..	..	44
43	..	97	104	..	..	112	96	43
42	109	96	..	..	122-123	111	..	42
41	..	..	..	124	..	..	..	41
40	..	95	..	..	..	110	..	40
39	..	..	..	..	..	..	..	39
38	..	..	103	..	121	..	95	38
37	108	.	..	..	..	109	..	37
36	..	..	..	..	..	..	..	36
35	..	..	..	..	..	..	..	35
34	..	..	..	121-123	120	..	..	34
33	107	94	..	..	..	108	..	33
32	..	..	102	..	..	..	92-94	32
31	..	..	..	..	119	..	..	31
30	..	..	..	120	..	..	..	30
29	106	..	101	..	..	107	..	29
28	104-105	..	..		..	105-106	..	28
27	..	..	..	..	118	..	..	27
26	..	93	100	118-119	..	..	91	26
25	103	..	..	..	117	104	..	25
24	..	92	99	117	..	..	..	24
23	..	..	..	..	115-116	102-103	..	23
22	..		..	..	114	..	..	22
21	102	91	97-98	115-116	109-113	101	90	21
20	..	.	96	..	108	..	..	20
19	..	..	95	..	..	100	89	19
18	..	90	94	.	107	..	..	18
17	..	..	..	114	106	..	88	17
16	..	..	93	..	105	99	..	16
15	101	89	.	..	..	..	..	15
14	..	..	92	..	..	..	87	14
13	..	88	87-91	111-113	104	..	..	13
12	..	..	86	..	..	..	..	12
11	..	87	..	..	..	98	..	11
10	100	..	85	110	..	..	86	10
9	..	..	..	..	103	97	83-85	9
8	97-99	86	..	108-109	102	96	..	8
7	..	..	84	107	101	..	82	7
6	96	..	..	105-106	99-100	95	..	6
5	..	..	..	104	98	94	..	5
4	95	83-85	83	102-103	96-97	.	81	4
3	94	82	82	101	95	93	80	3
2	90-93	79-81	75-81	95-100	85-94	83-92	71-79	2
1	89	78	74	94	84	82	70	1
	N=53 M=111.34 SD=10.21	N=53 M= 99.47 SD=10.48	N=53 M=105.43 SD=12.48	N=53 M=126.53 SD=12.93	N=53 M=126.21 SD=18.22	N=53 M=114.32 SD=15.40	N=53 M=101.40 SD=14.51	

Automotives



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

AUTOMOTIVES

Per-centile	G	V	N	S	P	Q	K	Per-centile
99	134-139	122-129	135-142	151-160	156-172	139-157	141-159	99
98	132-133	119-121	131-134	148-150	151-155	136-138	137-140	98
97	131	118	129-130	147	146-150	135	131-136	97
96	129-130	117	128	144-146	143-145	134	127-130	96
95	127-128	115-116	126-127	..	142	133	125-126	95
94	126	112-114	124-125	143	141	131-132	123-124	94
93	125	..	123	141-142	140	129-130	121-122	93
92	124	111	122	140	138-139	128	..	92
91	..	110	121	138-139	137	126-127	120	91
90	123	..	120	..	136	..	..	90
89	122	109	119	..	..	125	118-119	89
88	121	..	118	137	135	..	..	88
87	120	..	..	..	134	124	117	87
86	119	..	117	134-136	..	..	116	86
85	..	108	116	..	133	123	115	85
84	118	..	..	133	132	..	114	84
83	..	..	115	..	..	..	..	83
82	..	107	..	..	131	122	113	82
81	117	..	114	131-132	..	..	..	81
80	..	..	..	..	130	121	112	80
79	116	106	..	..	..	120	..	79
78	..	..	113	130	129	..	111	78
77	115	..	..	..	128	..	..	77
76	..	105	112	..	..	..	110	76
75	114	..	..	128-129	127	119	..	75
74	..	104	..	..	..	..	109	74
73	..	..	..	..	126	..	..	73
72	113	..	111	..	125	118	108	72
71	..	103	..	127	..	..	..	71
70	..	..	..	..	..	116-117	107	70
69	112	..	110	..	124	..	..	69
68	..	102	..	..	..	115	106	68
67	..	..	..	125-126	123	..	..	67
66	111	101	109	..	..	..	105	66
65	..	..	..	[illegible]	..	114	104	65
64	..	..	..	..	122	..	..	64
63	110	..		..	..	..	103	63
62		100		..	121	..	..	62
61		..		124	120	113	102	61
60	[illegible]	..		..	..	..	..	60
59	..	..		..	119	..	..	59
58	..	[illegible]		..	..	..	..	58
57	..	..	106	..	118	..	..	57
56	108	..		..	..	..	101	56
55	..	..	[illegible]	121-123	117	112	..	55
54	..	[illegible]	..	..	..	..	..	54
53	..	..	..	..	..	111	..	53
52	107	..	104	..	116	..	..	52
51	..	97	..	120	..	..	100	51
50	..	..	..	..	115	110	..	50

GENERAL APTITUDE TEST BATTERY

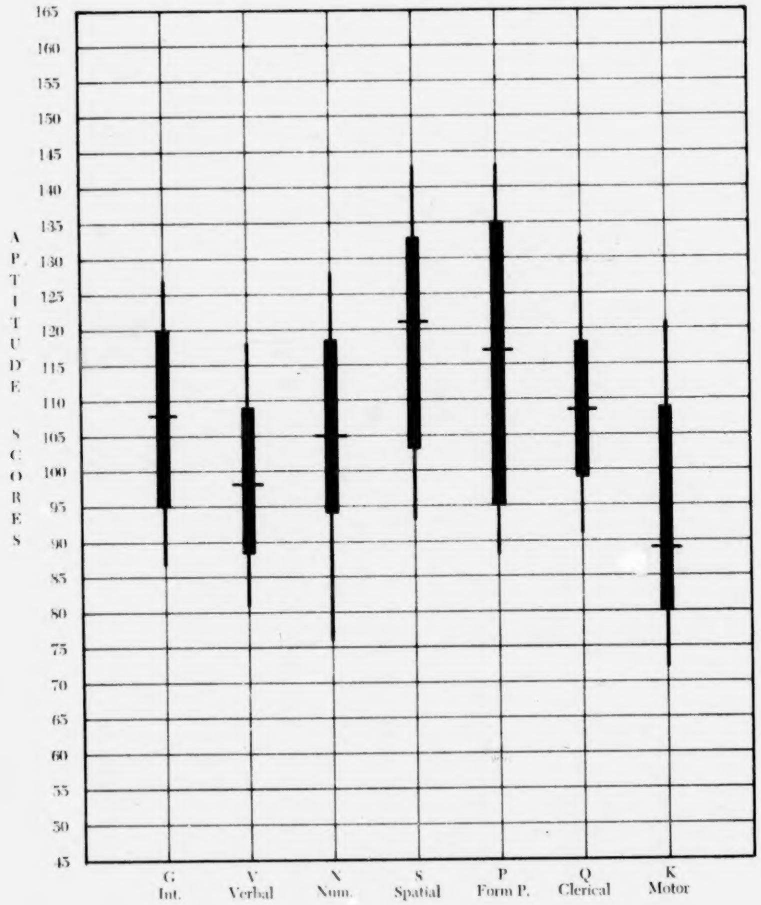
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

AUTOMOTIVES

(Continued)

Percentile	G	V	N	S	P	Q	K	Percentile
49	..	..	103	..	..	..	..	49
48	..	96	..	..	..	..	99	48
47	106	..	..	118-119	114	..	..	47
46	..	..	102	..	113	109	..	46
45	..	95	..	..	..	..	98	45
44	105	..	..	117	112	..	..	44
43	..	..	101	..	..	108	..	43
42	104	94	..	..	111	..	97	42
41	..	..	..	115-116	..	..	..	41
40	..	..	100	..	110	..	..	40
39	103	..	..	..	..	107	96	39
38	..	93	..	114	..	106	..	38
37	..	..	99	..	109	..	95	37
36	..	..	..	..	..	105	..	36
35	102	..	..	..	108	..	94	35
34	..	92	..	11-113	107	..	..	34
33	..	..	98	..	..	..	93	33
32	101	..	..	..	106	104	92	32
31	..	..	97	110	..	..	..	31
30	100	91	..	..	105	..	91	30
29	..	..	..	..	..	102-103	90	29
28	99	90	96	108-109	104	101	..	28
27	..	..	..	..	..	..	..	27
26	98	..	95	107	103	..	89	26
25	..	89	..	..	..	..	..	25
24	97	..	..	105-106	102	100	88	24
23	..	..	94	..	101	..	87	23
22	..	88	93	104	..	..	..	22
21	96	..	..	..	100	..	..	21
20	..	..	..	102-103	..	99	86	20
19	95	87	92	..	99	..	..	19
18	..	..	..	..	98	..	85	18
17	94	86	91	101	..	98	84	17
16	93	..	90	..	97	..	..	16
15	..	85	..	98-100	96	97	83	15
14	92	..	89	..	95	..	..	14
13	..	84	88	97	94	96	82	13
12	..	..	..	95-96	93	95	..	12
11	91	83	87	94	91-92	..	81	11
10	90	82	85-86	92-93	90	94	80	10
9	89	81	..	91	..	..	79	9
8	..	..	83-84	..	89	..	78	8
7	87-88	80	82	89-90	88	92-93	77	7
6	86	..	80-81	88	87	91	76	6
5	84-85	79	79	84-87	85-86	89-90	74-75	5
4	82-83	78	77-78	82-83	84	88	70-73	4
3	79-81	76-77	75-76	79-81	81-83	87	68-69	3
2	77-78	75	73-74	75-78	76-80	84-86	64-67	2
1	58-76	68-74	53-72	61-74	53-75	79-83	29-63	1
	N=495 M=106.05 SD=12.84	N=495 M= 96.66 SD=10.99	N=495 M=103.14 SD=13.69	N=495 M=117.29 SD=17.34	N=495 M=114.61 SD=17.92	N=495 M=110.15 SD=12.82	N=495 M= 99.24 SD=16.69	

Diesel Mechanics



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

DIESEL MECHANICS

Percentile	G	V	N	S	P	Q	K	Percentile
99	131-132	120-121	..	151-153	152	136-139	129-130	99
98	130	..	132	150	..	135	128	98
97	129	119	..	148-149	151	..	127	97
96	128	118	129-131	144-147	144-150	134	121-126	96
95	127	..	128	143	143	..	..	95
94	..	117	127	138-142	142	132-133	..	94
93	126	116	126	..	141	127-131	120	93
92	..	..	..	..	..	126	..	92
91	125	115	125	137	140	122-125	118-119	91
90	..	110-114	..	..	139	121	114-117	90
89	124	..	124	..	138	120	..	89
88	123	..	123	..	137	..	113	88
87	..	..	..	134-136	..	119	..	87
86	121-122	109	120-122	..	136	..	110-112	86
85	..	..	..	..	..	..	..	85
84	..	..	119	133	135	..	..	84
83	120	..	..	..	134	118	109	83
82	..	..	118	..	133	..	..	82
81	..	107-108	116-117	131-132	..	..	108	81
80	119	..	114-115	..	131-132	116-117	..	80
79	..	106	..	..	..	..	107	79
78	118	..	..	130	130	..	..	78
77	..	105	113	..	..	..	106	77
76	..	..	..	..	..	..	105	76
75	117	..	..	..	129	..	102-104	75
74	..	..	112	128-129	..	115	..	74
73	..	104	..	..	..	..	..	73
72	116	..	111	..	128	..	101	72
71	114-115	..	..	..	127	..	..	71
70	113	103	..	127	126	..	98-100	70
69	..	..	110	..	..	..	..	69
68	..	..	..	..	..	114	..	68
67	112	..	..	..	125	..	97	67
66	..	..	..	..	..	..	..	66
65	..	102	109	125-126	..	113	94-96	65
64	..	..	..	..	..	..	..	64
63	..	..	..	..	..	..	93	63
62	111	..	108	..	124	..	..	62
61	..	101	..	..	..	112	92	61
60	..	..	..	..	..	..	..	60
59	..	..	107	..	..	111	..	59
58	..	..	..	124	..	..	..	58
57	..	100	..	..	122-123	..	91	57
56	110	..	106	..	121	110	..	56
55	..	..	..	..	..	..	..	55
54	..	99	..	..	120	..	90	54
53	..	..	..	..	..	..	..	53
52	109	..	..	..	119	..	..	52
51	..	..	..	121-123	118	109	..	51
50	..	..	..	..	117	..	..	50

GENERAL APTITUDE TEST BATTERY

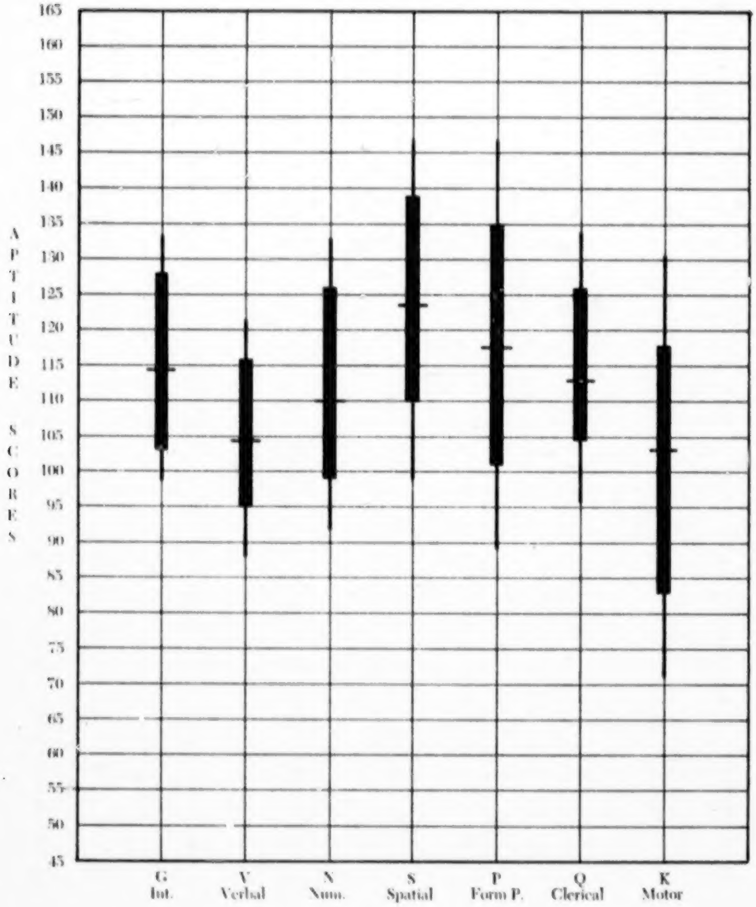
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

DIESEL MECHANICS

(Continued)

Percentile	G	V	N	S	P	Q	K	Percentile
49	108	..	105	..	113-116	..	89	49
48	..	98	..	..	..	108	..	48
47	..	..	..	120	112	..	..	47
46	105-107	..	..	..	..		..	46
45	..	..	..	..	..	..	88	45
44	..	..	..	..	111	..	..	44
43	..	..	104	117-119	..	..	87	43
42	104	97	..	115-116	110	..	..	42
41	..	96	..	..	109	..	..	41
40	..	..	..	..	108	107	86	40
39	..	95	..	..	..	..	..	39
38	..	..	103	114	107	..	85	38
37	..	..	..	..	..	..	..	37
36	103	..	..	..	106	..	..	36
35	..	94	..	111-113	105	..	84	35
34	..	..	..	..	..	..	..	34
33	..	..	102	..	104	106	..	33
32	..	..	100-101	..	..	..	83	32
31	102	..	..	..	..	105	..	31
30	..	93	99	..	103	..	..	30
29	..	..	98	110	..	..	..	29
28	100-101	..	97	..	102	..	..	28
27	..	..	..	..	..	..	..	27
26	99	..	..	..	..	..		26
25	..	92	96	..	..	104	82	25
24	..	..	..	..	..	..	..	24
23	..	..	..	108-109	101	..	..	23
22	98	..	..	105-107	..	102-103	..	22
21	..	..	95	..	..	101	..	21
20	97	91	..	..	97-100	..	..	20
19	..	..	..	104	96	..	..	19
18	96	90	..	..	..	100	..	18
17	95	..	94	..	95	..	81	17
16	..	89	..	102-103	..	..	80	16
15	94	..	..	..	..	99	..	15
14	..	88	93	101	94	97-98	79	14
13	..	87	..	..	..	..	78	13
12	93	86	92	98-100	..	95-96	77	12
11	..	..	91	..	93	..	..	11
10	..	85	..	..	..	..	..	10
9	..	84	90	97	92	94	76	9
8	92	..	..	..	91	..	..	8
7	90-91	83	78-89	95-96	89-90	93	74-75	7
6	88-89	82	77	94	..	92	73	6
5	87	..	76	..	88	91	72	5
4	84-86	79-81	75	81-93	87	90	70-71	4
3	82-83	78	..	79-80	..	89	67-69	3
2	..	..	74	..	..	88	66	2
1	81	74-77	71-73	78	86	81-87	60-65	1
	N=69 M=107.57 SD=12.03	N=69 M= 98.42 SD=10.24	N=69 M=105.04 SD=13.56	N=69 M=118.42 SD=15.88	N=69 M=115.64 SD=17.73	N=69 M=109.38 SD=11.13	N=69 M= 92.62 SD=15.30	

Electronics



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

ELECTRONICS

Per-centile	G	V	N	S	P	Q	K	Per-centile
99	140-143	128-131	137-153	153-156	160-165	140-155	141-149	99
98	136-139	126-127	136	151-152	157-159	137-139	140	98
97	135	124-125	135	148-150	154-156	136	137-139	97
96	134	123	134	..	149-153	135	132-136	96
95	..	122	133	..	146-148	134	130-131	95
94	133	..	132	147	145	..	128-129	94
93	..	121	131	..	143-144	133	125-127	93
92	132	120	130	144-146	142	132	124	92
91	..	..	..	..	141	..	123	91
90	131	..	129	143	140	131	122	90
89	..	119	..	141-142	139	130	121	89
88	130	..	128	..	138	129	120	88
87	129	118	..	..	137	..	..	87
86	..	117	127	140	136	127-128	119	86
85	..	..	126	..	..	126	118	85
84	128	116	..	..	135	..	..	84
83	..	..	125	138-139	..	125	..	83
82	..	..	..	..	..	124	117	82
81	127	115	124	137	134	..	..	81
80	..	..	123	..	..	123	116	80
79	126		..	..	..	..	..	79
78	..	112-114	122	134-136	133	..	115	78
77	125	..	..	..	131-132	..	114	77
76	..	..	121	133	130	122	..	76
75	123-124	111	120	131-132	..	..	113	75
74	..	..	..	..	..	121	112	74
73	122	..	119	..	129	..	..	73
72	..	110	..	130	..	120	..	72
71	121	..	118	..	128	..	..	71
70	..	..	..	..	..	..	111	70
69	..	..	..	128-129	127	119	..	69
68	120	109	117	..	..	..	..	68
67	..	..	..	..	126	..	110	67
66	119	..	116	..	125	..	..	66
65	..	..	..	127	..	118	..	65
64	118	..	..	..	124	..	109	64
63	..	..	115	..	123	116-117	..	63
62	117	..	..	..	..	..	..	62
61	..	108	..	125-126	..	..	108	61
60	..	..	114	..	122	115	..	60
59	..	..	..	..	..	..	107	59
58	116	107	..	..	121	..	..	58
57	..	..	113	..	..	..	..	57
56	..	..	..	..	120	..	106	56
55	..	106	112	..	..	..	..	55
54	..	..	..	124	..	114	105	54
53	..	..	..	..	119	..	..	53
52	115	105	111	..	..	..	104	52
51	..	..	..	..	118	..	..	51
50	..	..	110	..	..	..	103	50

GENERAL APTITUDE TEST BATTERY

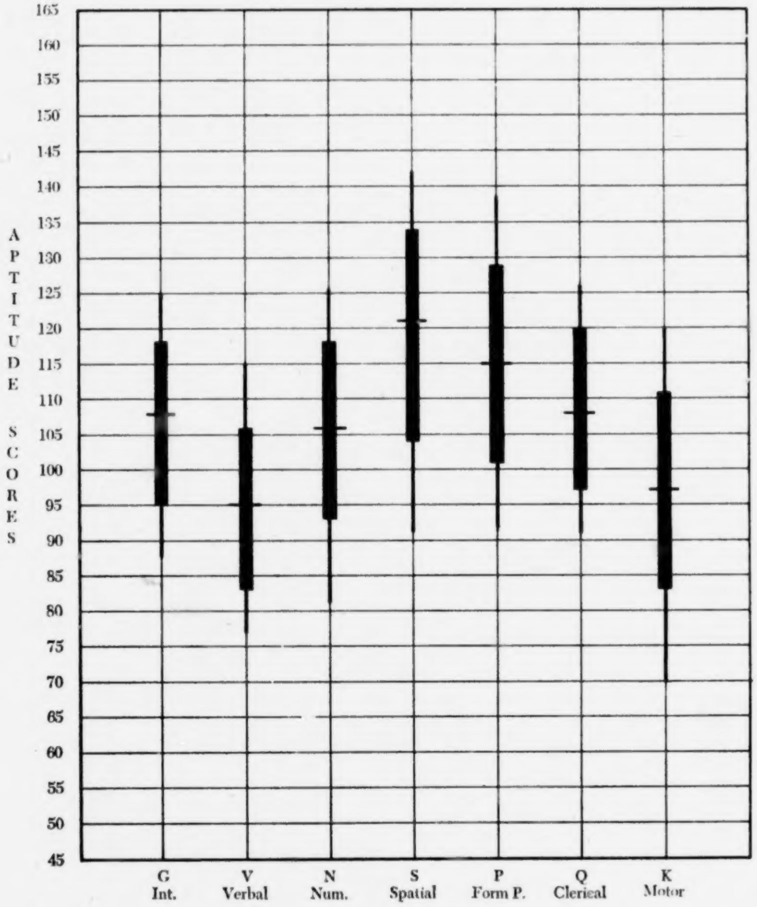
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

ELECTRONICS

(Continued)

Per-centile	G	V	N	S	P	Q	K	Per-centile
49				..	117	..	..	49
48	114	104	..	..	..	113	..	48
47	..	..		..	..	..	102	47
46	..	..	109	121-123	116	..	..	46
45			..				..	45
44	113	103	..	..	115	..	101	44
43	..	..		..	..	112	..	43
42	..		108	120	114	..		42
41		..	..	..	..		..	41
40	112	..	..	..	..	111	100	40
39	..	102	..	..	113	..	..	39
38	..		107	..	112	..	99	38
37	111	..	..	118-119	..	..	..	37
36	..	..	..	..	111	110	98	36
35	110	..	106	..	..	..	..	35
34	..	101	..	..	..	..	97	34
33	109	..	..	..	110	..	96	33
32	..	..	..	..	..	109	94-95	32
31	108	..	..	..	..	..	..	31
30	..	100	105	117	109	..	..	30
29	..	..	..	..	108	..	93	29
28	107	..	..	..	107	108	..	28
27	..	..	..	..	..	..	92	27
26	..	99	104	.	106	..	..	26
25	106	..	..	..	105	..	91	25
24	..	..	..	115-116	..	..	89-90	24
23	..	98	..	..	104	107	88	23
22	105	..	103	..	..	106	..	22
21	..	..	..	114	103	..	87	21
20	..	97	..	..	..	..	..	20
19	104	..	101-102	..	..	105	86	19
18	..	96	100	111-113	102	..	85	18
17	103	..	99	..	..	..	84	17
16	..	95	..	110	100-101	..	83	16
15	..	..	98	..	99	..	82	15
14	..	94	..	108-109	98	104	..	14
13	102	..	97	..	..	..	80-81	13
12	..	93	..	..	97	102-103	79	12
11	..	92	96	107	95-96	101	78	11
10	101	91	..	..	94	100	76-77	10
9	..	..	95	..	93	..	75	9
8	100	90	94	104-106	92	99	..	8
7	99	..	..	102-103	91	..	74	7
6	..	89	93	101	90	97-98	..	6
5	97-98	88	92	97-100	89	95-96	69-73	5
4	96	87	91	95-96	88	94	68	4
3	95	86	90	94	86-87	91-93	62-67	3
2	94	85	89	88-93	84-85	88-90	51-61	2
1	91-93	82-84	78-88	78-87	71-83	81-87	37-50	1
	N=202 M=114.93 SD=11.28	N=202 M=105.10 SD=10.20	N=202 M=111.60 SD=12.46	N=202 M=123.23 SD=14.43	N=202 M=117.92 SD=17.71	N=202 M=114.24 SD=11.71	N=202 M=101.45 SD=18.77	

Carpentry


APTITUDE SCORES
165
160
155
150
145
140
135
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
G Int.
V Verbal
N Num.
S Spatial
P Form P.
Q Clerical
K Motor

GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

CARPENTRY

Percentile	G	V	N	S	P	Q	K	Percentile
99	132-136	119-121	133-134	150-153	145-166	132-146	128-134	99
98	128-131	118	131-132	147-149	142-144	129-131	124-127	98
97	127	117	128-130	144-146	140-141	128	121-123	97
96	125-126	116	127	143	139	127	..	96
95	..	115	125-126	..	..	126	120	95
94	123-124	110-114	124	141-142	138	125	..	94
93	..	109	123	..	137	124	119	93
92	..	..	122	140	135-136	..	118	92
91	122	108	121	..	133-134	..	117	91
90	..	107	..	138-139	..	123	116	90
89	..	..	120	..	132	..	..	89
88	121	..	..	..	131	122	115	88
87	..	..	..	137	..	121	..	87
86	120	106	119	..	130	120	114	86
85	119	..	..	134-136	..	..	113	85
84	..	..	118	..	129	..	112	84
83	118	..	..	..	128	..	111	83
82	..	105	..	133	..	..	110	82
81	..	..	117	..	127	119	..	81
80	117	104	..	131-132	..	..	109	80
79	..	..	116	..	126	..	..	79
78	..	103	..	..	..	..	..	78
77	116	..	115	130	..	118	108	77
76	..	..	..	..	125	..	..	76
75	115	102	..	..	..	116-117	107	75
74	..	..	114	..	124	..	..	74
73	..	..	..	128-129	123	..	106	73
72	..	101	..	..	..	115	..	72
71	..	..	113	..	..	..	105	71
70	114	..	..	..	122	..	104	70
69	..	..	..	127	..	..	..	69
68	..	100	112	..	..	..	..	68
67	..	..	..	..	121	..	103	67
66	113	..	..	..	..	114	..	66
65	..	99	111	..	120	..	102	65
64	112	..	..	125-126	119	..	..	64
63	..	..	110	..	..	113	..	63
62	..	..	..	..	118	..	..	62
61	111	98	..	..	..	112	..	61
60	..	..	..	..	..	111	101	60
59	110	..	109	..	..	..	..	59
58	..	..	..	..	117	..	..	58
57	..	97	..	124	..	110	..	57
56	..	..	..	..	..	..	..	56
55	109	..	108	..	116	..	..	55
54	..	..	..	..	..	..	99-100	54
53	..	96	..	..	..	..	98	53
52	..	..	107	..	..	109	..	52
51	..	..	..	121-123	115	..	..	51
50	108	..	..	..	..	..	..	50

GENERAL APTITUDE TEST BATTERY

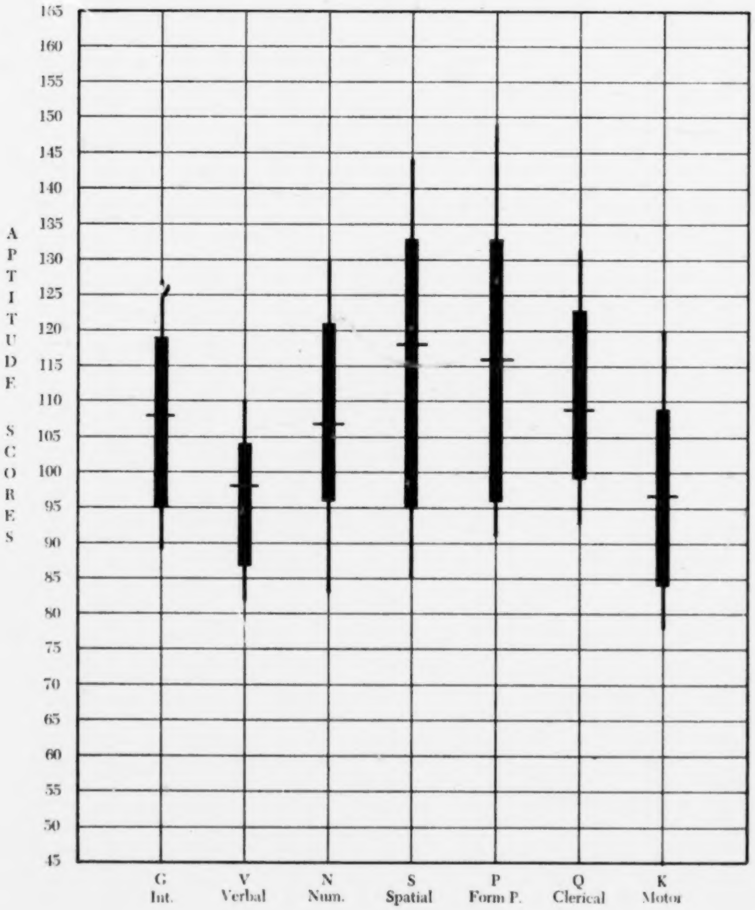
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

CARPENTRY

(Continued)

Per-centile	G	V	N	S	P	Q	K	Per-centile
49	. .	95	106	. .	. .	108	97	49
48	. .	. .	. .	120	. .	. .	. .	48
47	107	. .	. .	. .	114	. .	. .	47
46	. .	. .	105	. .	. .	. .	. .	46
45	. .	94	. .	. .	. .	106-107	96	45
44	106	. .	. .	118-119	113	. .	. .	44
43	. .	. .	. .	. .	. .	. .	95	43
42	105	. .	104	. .	. .	105	. .	42
41	. .	93	. .	. .	112	. .	94	41
40	. .	. .	103	117	. .	. .	. .	40
39	104	. .	. .	. .	. .	. .	. .	39
38	. .	. .	102	. .	111	. .	93	38
37	. .	. .	. .	. .	110	104	. .	37
36	. .	92	101	115-116	. .	. .	. .	36
35	. .	. .	. .	. .	109	102-103	. .	35
34	103	. .	. .	. .	. .	101	92	34
33	. .	. .	. .	114	. .	. .	. .	33
32	. .	91	100	. .	108	. .	91	32
31	102	. .	. .	. .	. .	100	. .	31
30	101	90	99	111-113	. .	. .	89-90	30
29	. .	89	. .	. .	107	. .	88	29
28	. .	. .	98	. .	. .	. .	. .	28
27	100	. .	. .	. .	106	. .	87	27
26	. .	. .	. .	110	105	. .	. .	26
25	. .	88	97	. .	. .	99	. .	25
24	. .	. .	. .	. .	104	. .	. .	24
23	99	. .	. .	. .	. .	. .	. .	23
22	. .	87	96	108-109	. .	. .	86	22
21	. .	. .	. .	. .	103	98	. .	21
20	98	86	. .	107	. .	. .	85	20
19	97	. .	95	. .	102	. .	84	19
18	96	85	. .	105-106	. .	. .	. .	18
17	. .	84	94	. .	101	97	83	17
16	. .	83	93	104	. .	. .	. .	16
15	95	. .	92	. .	100	. .	82	15
14	. .	82	91	102-103	99	. .	. .	14
13	94	. .	. .	101	. .	96	79-81	13
12	. .	. .	90	. .	98	. .	. .	12
11	. .	81	. .	98-100	. .	95	78	11
10	93	. .	89	97	97	94	76-77	10
9	. .	80	86-88	. .	. .	. .	75	9
8	92	. .	85	95-96	96	. .	74	8
7	91	. .	84	94	95	93	73	7
6	89-90	78-79	82-83	92-93	93-94	92	71-72	6
5	87-88	77	81	91	92	91	69-70	5
4	85-86	75-76	76-80	89-90	88-91	. .	68	4
3	81-84	73-74	74-75	88	84-87	88-90	67	3
2	74-80	72	68-73	79-87	80-83	85-87	63-66	2
1	65-73	70-71	59-67	74-78	65-79	73-84	20-62	1
	N = 181 M = 107.02 SD = 11.95	N = 181 M = 94.95 SD = 10.59	N = 181 M = 105.12 SD = 13.56	N = 181 M = 119.29 SD = 15.51	N = 181 M = 114.52 SD = 14.70	N = 181 M = 108.13 SD = 13.37	N = 181 M = 96.56 SD = 15.70	

Farm Equipment Mechanics



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

FARM EQUIPMENT MECHANICS

Percentile	G	V	N	S	P	Q	K	Percentile
99	135-136	116-119	135-147	151-153	157-160	139-166	123-132	99
98	134	115	..	150	156	138	122	98
97	133	111-114	134	147-149	150-155	133-137	121	97
96	128-132	110	131-133	144-146	149	132	120	96
95	127	..	130	..	..	..	..	95
94	124-126	109	127-129	143	144-148	131	119	94
93	..	..	126	141-142	143	129-130	118	93
92	123	107-108	..	140	..	127-128	116-117	92
91	..	106	125	..	142	126	115	91
90	122	105	..	138-139	137-141	125	114	90
89	121	..	..	137	135-136	..	113	89
88	..	..	124	..	..	124	..	88
87	120	..	123	134-136	134	..	112	87
86	..	..	..	..	..	..	111	86
85	119	..	122	133	133	123	110	85
84	..	..	..	..	..	..	109	84
83	118	104	..	131-132	132	120-122	108	83
82	..	..	121	..	130-131	..	107	82
81	117	..	120	..	129	119	106	81
80	..	..	119	..	..	..	..	80
79	..	..	118	130	..	..	..	79
78	116	..	116-117	..	128	118	105	78
77	..	..	..	..	127	..	..	77
76	115	..	115	..	126	115-117	..	76
75	..	103	114	128-129	..	..	104	75
74	..	..	..	..	125	..	..	74
73	114	..	..	..	..	114	..	73
72	..	..	113	..	124	..	103	72
71	..	..	..	..	..	..	..	71
70	..	102	..	127	..	..	..	70
69	113	..	112	..	123	..	102	69
68	..	..	..	..	..	..	..	68
67	..	..	111	..	..	113	..	67
66	112	..	..	..	..	..	..	66
65	..	101	110	125-126	..	..	..	65
64	..	..	..	..	122	..	101	64
63	..	..	..	..	..	..	..	63
62	111	..	..	124	..	..	..	62
61	..	..	..	..	..	..	..	61
60	..	..	..	..	120-121	112	..	60
59	..	100	..	..	..	..	..	59
58	110	..	109	121-123	119	..	100	58
57	..	..	..	..	..	111	..	57
56	..	..	..	..	118	110	99	56
55	..	..	..	..	..	..	..	55
54	109	..	..	120	..	..	98	54
53	..	99	108	..	117	..	..	53
52	..	..	..	..	..	..	..	52
51	..	..	107	..	116	109	97	51
50	108	98	..	118-119	..	..	..	50

GENERAL APTITUDE TEST BATTERY

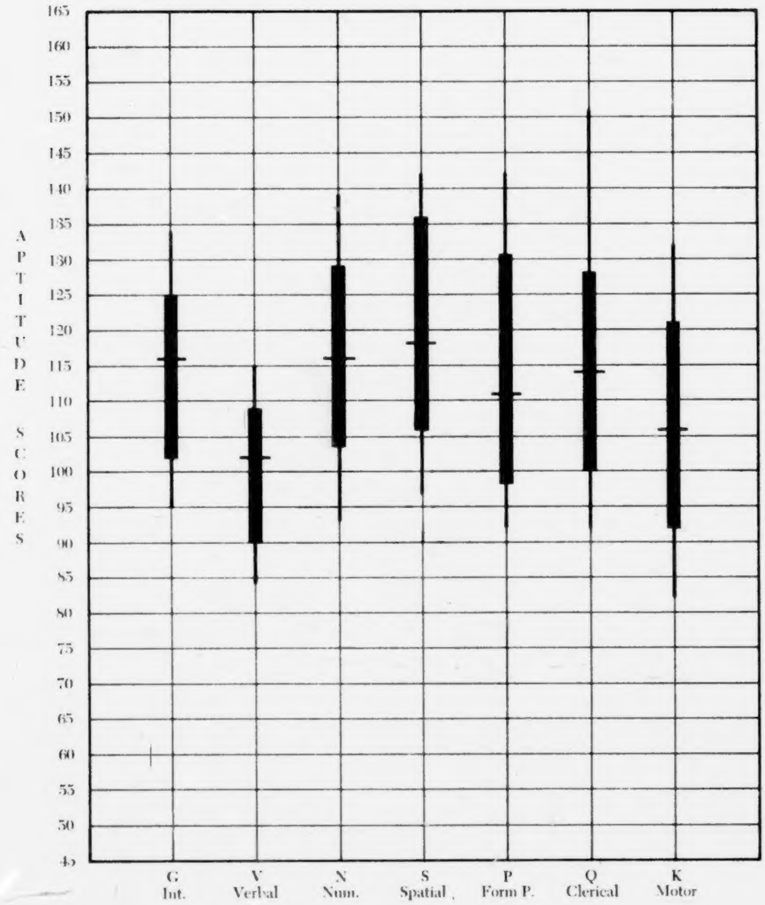
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

FARM EQUIPMENT MECHANICS

(Continued)

Percentile	G	V	N	S	P	Q	K	Percentile
49	107	..	..	117	..	..	96	49
48	..	..	106	..	115	..	..	48
47	..	97	..	115-116	..	108	95	47
46	106	..	..	..	..	..	..	46
45	..	..	..	..	114	..	..	45
44	..	96	105	114	..	..	94	44
43	..	..	..	..	..	..	..	43
42	..	..	104	111-113	113	107	..	42
41	..	..	..	..	..	..	..	41
40	105	95	..	110	..	106	..	40
39	..	..	..	..	..	..	93	39
38	..	..	..	..	..	105	..	38
37	..	94	103	108-109	112	..	..	37
36	104	..	..	..	..	..	..	36
35	..	..	..	..	..	..	..	35
34	..	..	..	..	111	..	..	34
33	103	93	102	..	..	104	92	33
32	..	..	..	107	..	..	91	32
31	102	..	101	..	108-110	102-103	88-90	31
30	..	..	..	..	107	..	..	30
29	101	92	..	..	..	..	..	29
28	..	..	100	..	103-106	..	87	28
27	100	..	..	..	..	101	..	27
26	..	..	99	105-106	102	..	..	26
25	..	91	..	..	..	..	..	25
24	..	90	..	104	101	..	..	24
23	99	..	98	..	..	..	86	23
22	..	89	..	102-103	99-100	..	..	22
21	..	..	..	..	..	100	85	21
20	..	..	..	..	98	..	..	20
19	98	88	97	101	97	..	..	19
18	..	..	..	..	96	..	84	18
17	96-97	87	..	95-100	..	..	..	17
16	95	..	96	..	..	99	..	16
15	94	..	..	94	95	..	83	15
14	..	..	95	92-93	..	..	..	14
13	93	..	..	..	..	98	..	13
12	92	86	93-94	..	94	..	82	12
11	91	..	..	..	..	97	..	11
10	..	..	92	91	93	..	81	10
9	..	..	..	..	..	96	..	9
8	90	83-85	90-91	..	..	94-95	80	8
7	..	..	..	89-90	92	..	79	7
6	..	82	84-89	85-88	..	93	78	6
5	89	..	83	..	..	..	..	5
4	..	..	..	84	91	91-92	77	4
3	88	81	82	79-83	87-90	90	73-76	3
2	87	80	..	78	86	..	72	2
1	81-86	76-79	72-81	71-77	82-85	88-89	55-71	1
	N=72 M=107.49 SD=11.53	N=72 M= 96.68 SD= 8.55	N=72 M=107.31 SD=13.22	N=72 M=115.81 SD=17.79	N=72 M=115.86 SD=17.08	N=72 M=109.94 SD=12.68	N=72 M= 96.40 SD=13.21	

Fluid Power Technology



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

FLUID POWER TECHNOLOGY

Percentile	G	V	N	S	P	Q	K	Percentile
99	143	123	146		160			99
98	142	118-122	142-145		146-159	152	146	98
97	141	117	141	143	145		..	97
96	134-140	116	140	..	143-144	..	133-145	96
95	..	115	139	..	142	151	132	95
94		112-114	138	141-142	137-141	137-150	131	94
93	133	..	137	..	136	136	..	93
92	..	..	..	..	..	135	..	92
91	..	111	..	..	135	..	130	91
90	130-132	..	136	140	134	134		90
89	129	..		..	133			89
88	127-128	110	133-135	..	..	..	129	88
87	..	..	..	..	132	133	128	87
86	..	..	132	138-139	..	130-132	127	86
85	126	..	..	..	..	129	126	85
84	..	..	129-131	137	131	..	121-125	84
83	..	109	..	..	..	128		83
82	125	..	128	134-136	130	127	120	82
81	124	..	..	..	129	126	..	81
80	..	..	..	..	128	..	119	80
79	..	..	127	133	127	125	118	79
78	..	..	126	..	..	..	..	78
77	123	..	125	..	126	124	..	77
76	..	..	..	131-132	125	..	117	76
75	..	..	..	130	124	123	116	75
74	..	..	124	..	..	..	..	74
73	..	..	..	128-129	123	..	..	73
72	122	108	..	..	..	122	115	72
71	..	..	..	127	122	121	..	71
70	..	..	123	..	..	..	..	70
69	..	..	122	125-126	121	120	114	69
68	121	..	..	..	120	..	..	68
67	..	..	..	..	119	..	..	67
66	..	..	121	..	118	119	113	66
65	..	107	..	..	..	..	..	65
64	..	..	..	..	..	..	..	64
63	120	106	..	124	117	..	112	63
62	..	..	..	..	..	118	111	62
61	..	105	120	..	116	..	110	61
60	..	..	..	..	..	..	..	60
59	119	..	..	..	..	116-117	..	59
58	..	104	..	..	115	..	109	58
57	118	..	..	121-123	..	115	..	57
56	..	..	119	..	..	..	..	56
55	..	103	..	..	114	..	108	55
54	117	..	..	120	113	..	..	54
53	..	..	118	..	..	..	107	53
52	..	..	117	..	112	114	..	52
51	..	102	116	118-119	..	..	106	51
50	116	..	..	..	111	..	..	50

GENERAL APTITUDE TEST BATTERY

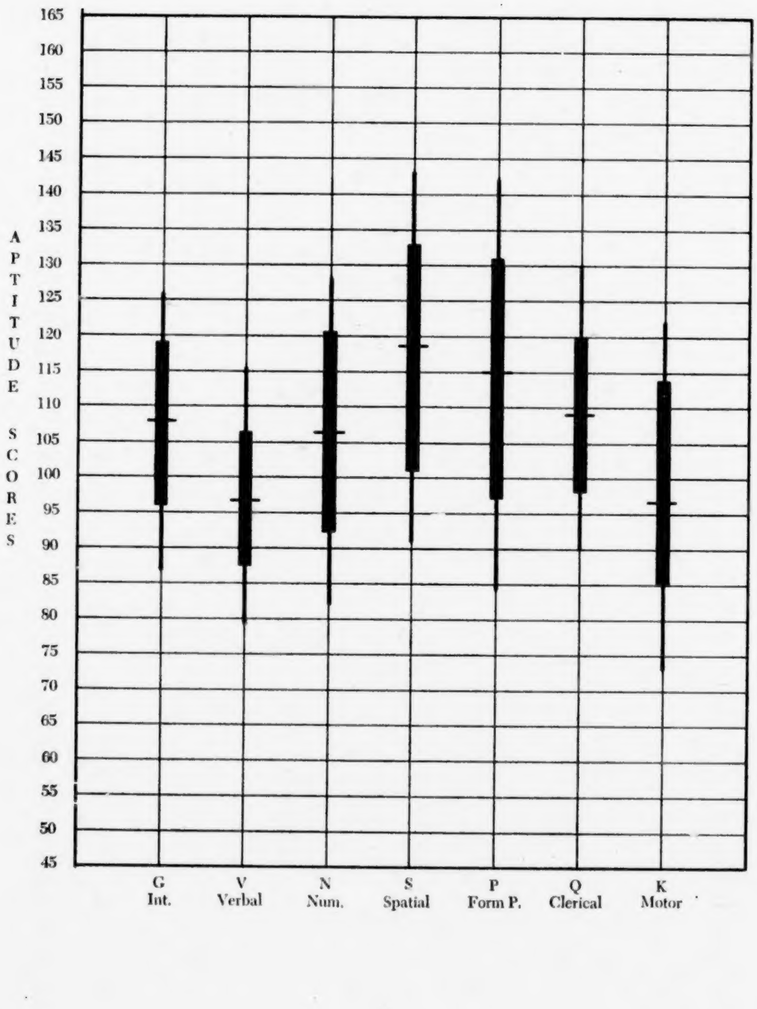
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

FLUID POWER TECHNOLOGY

(Continued)

Percentile	G	V	N	S	P	Q	K	Percentile
49	..	..	..	..	..	..	..	49
48	..	..	115	..	..	..	..	48
47	..	101	..	..	..	..	105	47
46	115	..	..	117	110	113	..	46
45	113-114	..	..	..	..	..	..	45
44	112	100	114	..	..	..	..	44
43	..	..	113	..	..	..	104	43
42	..	..	112	..	..	..	..	42
41	111	99	..	115-116	..	..	103	41
40	..	..	..	..	109	112	..	40
39	..	..	..	114	..	..	102	39
38	110	98	..	..	..	..	..	38
37	..	..	..	111-113	108	111	..	37
36	..	..	111	..	..	..	..	36
35	..	95-97	..	..	107	110	101	35
34	109	..	..	..	..	..	..	34
33	..	..	..	..	..	..	..	33
32	..	..	..	..	106	109	..	32
31	..	..	110	110	..	..	100	31
30	108	..	..	..	..	108	99	30
29	..	94	..	..	105	..	98	29
28	107	..	..	..	..	..	..	28
27	..	..	109	..	..	..	..	27
26	106	..	..	..	104	107	97	26
25	..	..	..	108-109	103	..	..	25
24	105	93	108	..	..	106	96	24
23	..	92	..	..	..	..	..	23
22	..	91	107	..	102	105	95	22
21	..	..	..	107	..	..	..	21
20	104	..	106	..	..	101-104	94	20
19	..	..	105	..	101	..	..	19
18	103	90	104	..	98-100	..	93	18
17	..	..	..	..	..	100	..	17
16	102	..	103	105-106	97	..	92	16
15	..	..	..	104	..	..	91	15
14	99-101	89	..	102-103	96	99	90	14
13	..	..	102	..	..	..	..	13
12	98	88	..	..	..	98	89	12
11	..	..	..	..	95	..	..	11
10	..	87	101	101	..	..	87-88	10
9	97	86	..	..	..	97	..	9
8	..	85	97-100	..	..	..	86	8
7	..	..	96	..	94	96	..	7
6	96	..	94-95	98-100	93	92-95	83-85	6
5	..	84	93	97	92	..	82	5
4	91-95	..	..	95-96	87-91	91	79-81	4
3	90	..	92	94	86	..	78	3
2	86-89	81-83	83-91	85-93	..	..	75-77	2
1	85	80	82	84	85	90	74	1
	N=51 M=114.51 SD=12.41	N=51 M=100.49 SD= 9.63	N=51 M=116.33 SD=13.24	N=51 M=119.04 SD=14.27	N=51 M=113.86 SD=15.53	N=51 M=115.31 SD=14.51	N=51 M=107.20 SD=15.73	

Machine Shop



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

MACHINE SHOP

Percentile	G	V	N	S	P	Q	K	Percentile
99	131-141	123-125	136-145	148-153	153-165	139-143	135-138	99
98	130	119-122	132-135	..	148-152	137-138	129-134	98
97	129	118	130-131	147	145-147	135-136	128	97
96	127-128	117	129	144-146	143-144	132-134	124-127	96
95	126	115-116	128	143	142	129-131	121-123	95
94	125	112-114	..	..	..	..	..	94
93	..	110-111	126-127	138-142	141	128	120	93
92	124	109	..	..	140	126-127	..	92
91	123	..	125	..	139	125	119	91
90	122	..	..	137	138	124	118	90
89	121	..	124	..	136-137	123	..	89
88	..	108	123	..	135	..	117	88
87	..	..	..	134-136	134	122	116	87
86	120	..	122	..	133	121	..	86
85	..	107	..	..	132	..	115	85
84	119	..	121	133	131	120	114	84
83	..	..	..	..	130	..	113	83
82	..	..	120	..	129	..	112	82
81	118	106	..	131-132	128	..	..	81
80	..	..	119	..	..	119	..	80
79	117	..	118	..	127	..	111	79
78	..	..	..	..	..	..	..	78
77	116	105	..	130	126	..	110	77
76	115	..	117	..	..	..	..	76
75	..	..	..	..	..	118	..	75
74	..	..	..	..	125	..	109	74
73	114	104	..	128-129	..	116-117	..	73
72	..	..	..	..	..	115	108	72
71	..	..	116	127	124	..	107	71
70	..	103	..	..	..	..	106	70
69	113	..	..	125-126	..	..	..	69
68	..	..	115	..	..	114	105	68
67	..	102	..	..	123	..	..	67
66	..	..	114	..	..	..	..	66
65	112	..	..	..	..	..	104	65
64	..	101	113	..	122	..	103	64
63	..	..	..	124	..	..	102	63
62	..	..	..	..	121	113	..	62
61	111	100	112	..	119-120	..	101	61
60	..	..	..	..	118	..	..	60
59	..	..	111	..	..	..	..	59
58	..	99	110	..	..	112	100	58
57	..	..	..	121-123	117	111	..	57
56	110	..	109	..	..	..	99	56
55	..	98	..	..	..	110	..	55
54	..	..	108	..	116	..	98	54
53	109	..	..	120	..	..	..	53
52	..	97	..	..	..	..	..	52
51	..	..	107	..	115	109	97	51
50	108	..	..	118-119	..	..	..	50

GENERAL APTITUDE TEST BATTERY

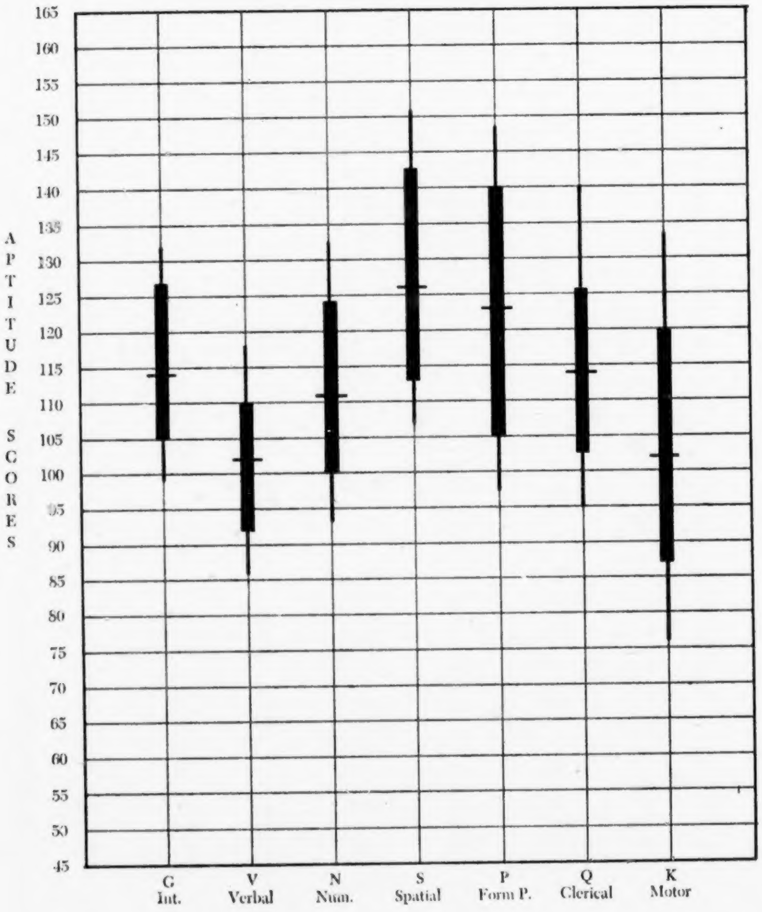
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

MACHINE SHOP

(Continued)

Percentile	G	V	N	S	P	Q	K	Percentile
49	..	..	106	..	..	..	96	49
48	107	96	..	..	114	..	..	48
47	..	..	..	117	113	..	..	47
46	..	..	..	..	..	..	94	46
45	..	95	105	115-116	..	108	..	45
44	106	..	..	..	112	..	..	44
43	..	..	..	..	..	..	94	43
42	..	..	..	..	..	..	..	42
41	..	94	104	114	..	..	93	41
40	..	..	103	..	111	107	..	40
39	105	..	..	..	..	106	92	39
38	..	..	102	..	..	..	..	38
37	..	93	..	111-113	110	..	..	37
36	..	..	101	..	..	105	91	36
35	104	..	..	..	108-109	..	..	35
34	..	..	..	..	107	..	..	34
33	..	92	100	..	..	..	90	33
32	103	..	..	110	106	..	..	32
31	..	..	..	..	..	104	..	31
30	..	91	99	..	..	..	..	30
29	102	..	..	..	105	102-103	89	29
28	..	..	98	..	..	101	..	28
27	101	..	97	108-109	104	..	..	27
26	..	90	..	..	103	..	..	26
25	100	..	..	107	..	..	88	25
24	..	..	96	..	102	100	..	24
23	99	..	..	..	..	..	87	23
22	..	..	..	105-106	101	..	..	22
21	98	89	95	..	100	..	..	21
20	..	..	..	104	99	99	..	20
19	..	..	..	102-103	98	..	86	19
18	97	88	94	..	..	..	..	18
17	96	..	..	..	97	..	85	17
16	..	87	93	101	..	98	84	16
15	95	..	..	..	96	..	..	15
14	..	..	92	98-100	..	..	83	14
13	94	86	91	..	95	97	82	13
12	93	..	..	97	..	..	..	12
11	92	85	90	95-96	94	96	79-81	11
10	91	84	89	..	93	94-95	77-78	10
9	90	83	88	94	92	93	76	9
8	89	81-82	86-87	..	90-91	91-92	75	8
7	..	80	85	92-93	89	..	..	7
6	88	..	83-84	..	87-88	..	74	6
5	86-87	78-79	82	91	82-86	90	..	5
4	..	77	..	..	81	89	69-73	4
3	84-85	75-76	77-81	89-90	79-80	..	68	3
2	83	73-74	76	81-88	78	88	47-67	2
1	73-82	70-72	63-75	68-80	60-77	81-87	43-46	1
	N=166 M=107.47 SD=11.79	N=166 M= 96.78 SD=10.54	N=166 M=106.63 SD=14.08	N=166 M=117.39 SD=15.95	N=166 M=114.34 SD=17.49	N=166 M=109.42 SD=11.85	N=166 M= 97.42 SD=16.47	

Mechanical Drafting and Design



GENERAL APTITUDE TEST BATTERY
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools
MECHANICAL DRAFTING AND DESIGN

Percentile	G	V	N	S	P	Q	K	Percentile
99	140	126-137	139-140	160-169	161-175	144-146	144-159	99
98	138-139	124-125	135-138	154-159	157-160	142-143	141-143	98
97	136-137	120-123	134	153	154-156	..	137-140	97
96	133-135	118-119	133	151-152	150-153	141	135-136	96
95	132	..	..	..	148-149	139-140	133-134	95
94	..	..	132	150	147	137-138	132	94
93	131	117	131	..	..	136	130-131	93
92	..	..	130	148-149	146	135	128-129	92
91	130	..	129	..	..	133-134	127	91
90	..	116	127-128	..	145	132	125-126	90
89	129	115	126	147	144	130-131	124	89
88	..	112-114	..	..	143	129	123	88
87	128	..	125	..	142	128	122	87
86	..	111	..	144-146	141	..	121	86
85	127	..	..	..	140	127	..	85
84	..	110	..	143	..	126	120	84
83	126	..	124	..	139	..	..	83
82	..	..	..	141-142	..	125	..	82
81	125	..	123	..	138	..	119	81
80	..	109	122	..	..	..	118	80
79	..	..	..	140	137	124	..	79
78	124	..	121	..	..	..	..	78
77	..	..	..	..	136	123	117	77
76	123	..	..	138-139	..	..	..	76
75	..	..	120	..	..	..	116	75
74	122	108	..	..	135	..	115	74
73	..	..	119	137	..	122	114	73
72	121	..	..	..	..	..	113	72
71	..	..	118	..	134	121	..	71
70	..	107	..	134-136	133	..	112	70
69	..	..	..	..	..	120	..	69
68	120	..	..	..	132	..	111	68
67	..	..	117	133	..	..	..	67
66	..	..	..	..	131	..	..	66
65	..	106	..	..	..	119	110	65
64	119	..	116	..	130	..	109	64
63	..	..	..	131-132	..	..	108	63
62	..	..	..	..	129	..	..	62
61	118	105	..	..	..	..	107	61
60	..	..	115	130	..	..	..	60
59	117	..	..	..	128	118	106	59
58	..	..	..	..	127	..	..	58
57	..	104	..	128-129	..	..	105	57
56	116	..	114	..	126	..	..	56
55	..	..	..	..	..	116-117	104	55
54	..	..	113	..	125	115	..	54
53	..	103	..	127	..	..	103	53
52	115	..	112	..	..	..	..	52
51	..	..	..	..	124	..	102	51
50	..	..	..	..	123	114	..	50

GENERAL APTITUDE TEST BATTERY

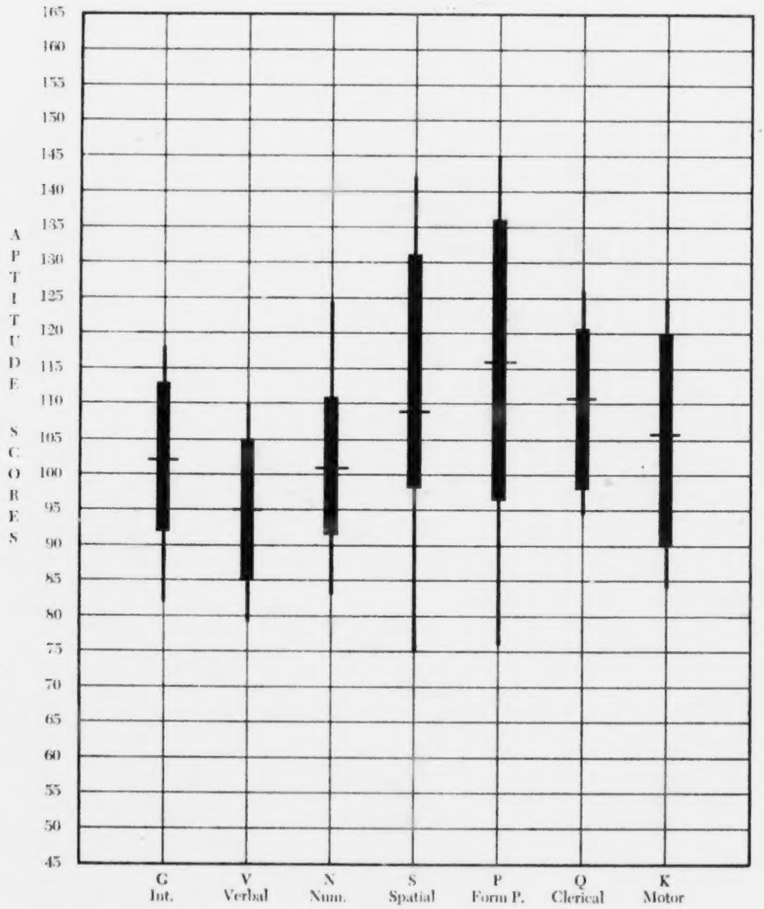
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

MECHANICAL DRAFTING AND DESIGN

(Continued)

Percentile	G	V	N	S	P	Q	K	Percentile
49	114	..	..	125-126	122	..	..	49
48	..	102	111	..	121	..	..	48
47	..	..	..	..	120	..	..	47
46	113	..	..	..	..	..	..	46
45	..	..	110	..	119	..	101	45
44	..	101	..	..	..	113	..	44
43	..	..	..	..	118	..	..	43
42	112	..	..	..	..	..	..	42
41	..	..	109	124	117	..	..	41
40	..	100	..	..	..	..	..	40
39	..		..	..	116	..	100	39
38	..	..	108	..	..	112	..	38
37	111	99	..	..	..	..	99	37
36	..	..	..	..	115	111	..	36
35	..	..	107	..	114	110	98	35
34	..	98	..	121-123	..	..	97	34
33	..	..	106	..	..	..	96	33
32	110	..	..	..	113	109	..	32
31	..	97	..	120	..	..	95	31
30	..	..	105	..	112	..	..	30
29	..	..	..	..	..	108	..	29
28	..	96	104	118-119	111	..	94	28
27	109	..	..	..	..	..	..	27
26	..	..	..	..	..	107	93	26
25	..	95	103	117	110	..	..	25
24	108	..	..	..	..	106	92	24
23	..	..	..	..	109	..	91	23
22	107	94	102	115-116	..	105	..	22
21	..	..	..	..	108	..	90	21
20	106	93	..	..	107	..	..	20
19	..	..	101	114	..	104	89	19
18	..	..	..	..	106	..	..	18
17	105	..	100	..	..	102-103	88	17
16	..	92	..	111-113	105	..	87	16
15	..	..	..	..	..	101	..	15
14	104	..	..	..	104	..	..	14
13	..	..	99	..	..	..	86	13
12	..	91	..	110	..	100	84-85	12
11	103	90	..	..	103	99	83	11
10	..	89	98	..	..	..	..	10
9	102	88	97	..	101-102	98	82	9
8	..	87	96	..	100	..	..	8
7	101	..	95	108-109	99	97	..	7
6	100	86	94	107	98	96	78-81	6
5	99	..	93	..	97	94-95	75-77	5
4	97-98	84-85	91-92	105-106	94-96	..	74	4
3	94-96	80-83	..	104	90-93	93	72-73	3
2	93	78-79	90	101-103	85-89	89-92	70-71	2
1	85-92	74-77	57-89	81-100	71-84	84-88	41-69	1
	N=251 M=115.16 SD=10.46	N=251 M=101.88 SD=10.22	N=251 M=111.80 SD=12.16	N=251 M=127.50 SD=14.32	N=251 M=122.55 SD=17.34	N=251 M=114.90 SD=12.57	N=251 M=103.59 SD=17.54	

Plumbing and Sheet Metal



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

PLUMBING AND SHEET METAL

Percentile	G	V	N	S	P	Q	K	Percentile
99	124	115	126	147	154	135	146	99
98	120-123	112-114	..	144-146	150-153	134	141-145	98
97	119	..	..	..	149	133	140	97
96	..	111	125	143	145-148	126-132	125-139	96
95	118	..	..	..	..	..	..	95
94	..	109-110	124	141-142	144	125	..	94
93	117	..	123	140	..	..	..	93
92	..	..	120-122	138-139	143	..	124	92
91	..	108	119	..	142	..	..	91
90	116	..	118	..	..	124	..	90
89	..	..	117	137	141	..	..	89
88	..	107	116	..	139-140	123	..	88
87	..	..	115	..	138	..	121-123	87
86	115	..	114	134-136	..	122	..	86
85	..	106	113	133	137	..	..	85
84	113-114	..	112	131-132	..	121	120	84
83	..	..	111	..	136	..	..	83
82	..	103-105	110	130	133-135	120	..	82
81	112	..	..	..	..	..	119	81
80	..	..	109	128-129	132	..	118	80
79	..	..	..	..	..	..	..	79
78	111	..	108	..	130-131	119	117	78
77	110	102	..	127	129	..	116	77
76	109	..	..	..	128	..	..	76
75	..	..	..	..	..	..	115	75
74	108	..	..	..	127	..	..	74
73	..	..	..	125-126	125-126	..	114	73
72	..	..	107	..	..	118	..	72
71	107	101	..	..	124	..	113	71
70	..	100	..	..	..	..	..	70
69	..	99	..	..	..	116-117	112	69
68	..	..	..	124	123	..	111	68
67	..	98	106	..	..	..	110	67
66	106	..	..	..	..	..	..	66
65	..	97	105	..	..	..	..	65
64	..	..	..	..	..	115	..	64
63	..	..	104	121-123	122	..	..	63
62	..	..	..	..	..	..	109	62
61	105	..	..	120	..	..	..	61
60	..	..	..	..	..	..	..	60
59	..	..	103	118-119	120-121	..	..	59
58	..	..	..	117	119	114	108	58
57	..	..	..	115-116	..	..	..	57
56	104	96	..	..	..	..	..	56
55	..	..	..	114	118	113	..	55
54	..	..	..	..	..	..	107	54
53	103	..	..	111-113	..	..	..	53
52	..	..	102	..	..	112	..	52
51	..	..	..	110	117	111	..	51
50	102	..	..	..	..	..	106	50

GENERAL APTITUDE TEST BATTERY

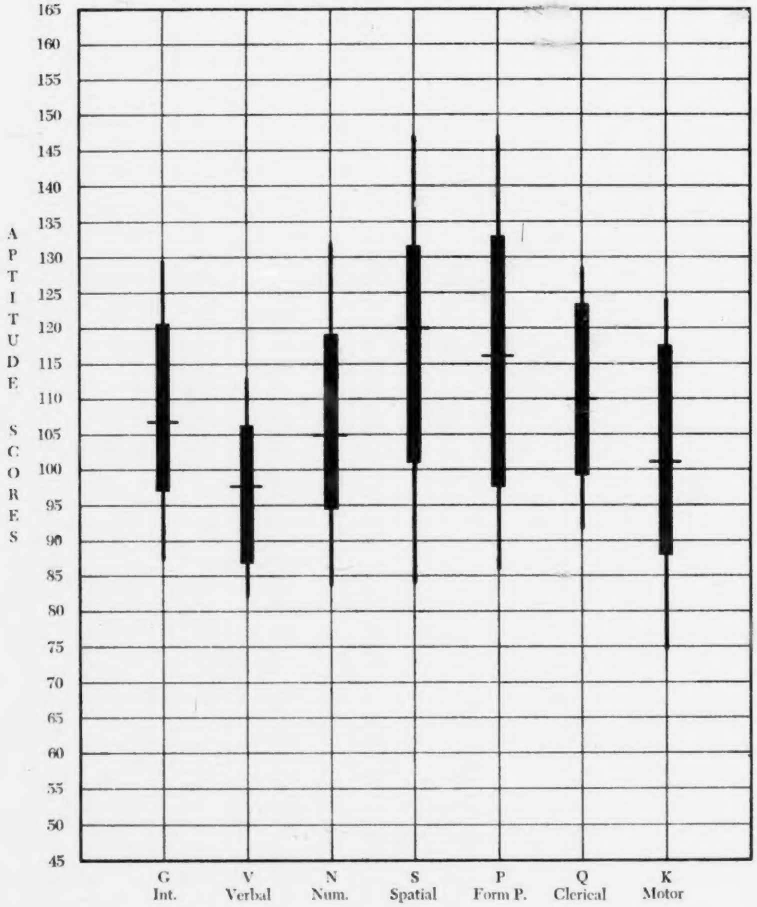
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

PLUMBING AND SHEET METAL

(Continued)

Percentile	G	V	N	S	P	Q	K	Percentile
49	..	..	..	108-109	115-116	110	105	49
48	..	..	101	..	..	..	104	48
47	..	95	100	..	114	..	..	47
46	101	..	..	..	..	..	..	46
45	..	94	..	..	..	109	103	45
44	100	..	..	..	113	..	..	44
43	..	93	99	107	..	..	..	43
42	..	..	..	..	112	108	102	42
41	..	..	..	..	..	..	..	41
40	99	92	..	..	..	107	..	40
39	..	..	..	..	111	106	..	39
38	..	..	..	..	..	..	..	38
37	..	91	98	105-106	..	105	..	37
36	..	..	..	..	110	..	101	36
35	98	..	..	..	109	..	..	35
34	..	..	..	104	108	..	..	34
33	..	90	97	..	106-107	104	..	33
32	..	..	..	..	105	..	..	32
31	97	..	..	102-103	..	102-103	100	31
30	..	..	96	..	104	..	99	30
29	..	89	..	..	..	..	98	29
28	96	..	..	..	..	101	97	28
27	..	88	95	..	103	..	96	27
26	95	..	..	..	..	..	..	26
25	..	..	..	..	..	..	..	25
24	..	87	..	101	102	..	95	24
23	94	..	..	..	101	100	..	23
22	..	..	94	..	100	..	..	22
21	..	..	..	..	99	..	94	21
20	..	86	93	..	..	99	93	20
19	93	..	..	..	98	..	92	19
18	..	..	92	98-100	97	..	91	18
17	..	..	..	..	..	..	90	17
16	92	85	91	97	96	98	..	16
15	..	..	90	..	..	..	..	15
14	91	..	..	89-96	95	..	89	14
13	..	84	..	..	94	..	..	13
12	..	..	89	88	85-93	..	..	12
11	90	..	..	..	84	97	..	11
10	..	83	87-88	85-87	81-83	..	88	10
9	89	..	86	84	80	..	87	9
8	..	82	85	79-83	78-79	..	..	8
7	88	..	..	78	77	96	86	7
6	83-88	79-81	84	75-77	..	95	85	6
5	82	..	..	..	76	..	84	5
4	79-81	78	77-83	74	60-75	94	79-83	4
3	78	..	76	..	59	..	78	3
2	58-77	75-77	61-75	69-73	..	88-93	67-77	2
1	57	74	60	68	58	87	66	1
	N=49 M=101.47 SD=11.74	N=49 M= 94.67 SD= 9.42	N=49 M=101.18 SD=12.44	N=49 M=121.06 SD=19.11	N=49 M=113.86 SD=21.48	N=49 M=110.18 SD=10.84	N=49 M=105.42 SD=14.97	

Power and Home Electricity



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

POWER AND HOME ELECTRICITY

Percentile	G	V	N	S	P	Q	K	Percentile
99	135-147	120-131	136-143	153-156	155-163	141-150	135-146	99
98	132-134	118-119	135	151-152	151-154	136-140	131-134	98
97	131	117	134	148-150	149-150	132-135	128-130	97
96	..	115-116	133	..	148	129-131	126-127	96
95	129-130	112-114	132	147	147	..	123-125	95
94	..	111	131	144-146	145-146	127-128	122	94
93	128	110	129-130	141-143	143-144	..	121	93
92	127	..	128	140	142	126	..	92
91	126	109	127	..	140-141	..	..	91
90	..	..	126	138-139	..	..	120	90
89	125	..	124-125	..	139	125	..	89
88	123-124	..	122-123	137	138	..	..	88
87	122	..	121	134-136	136-137	..	..	87
86	..	108	..	..	135	124	119	86
85	..	..	120	133	134	..	118	85
84	121	107	..	..	..	..	..	84
83	..	..	119	131-132	133	125	..	83
82	120	106	118	..	132	..	..	82
81	..	..	116-117	..	..	122	117	81
80	119	105	..	..	131	121	..	80
79	118	..	115	130	130	120	116	79
78	117	..	..	..	129	..	..	78
77	..	..	114	..	128	..	115	77
76	116	..	..	..	..	119	114	76
75	..	104	..	128-129	127	..	113	75
74	115	..	..	..	..	..	..	74
73	..	..	113	..	126	..	112	73
72	114	..	..	127	..	118	..	72
71	..	..	..	..	..	116-117	111	71
70	113	103	112	..	125	..	..	70
69	..	..	..	125-126	..	..	110	69
68	..	..	..	..	..	115	..	68
67	112	..	111	..	124	..	109	67
66	..	..	..	..	..	..	108	66
65	..	102	..	..	123	..	..	65
64	111	..	110	..	..	..	..	64
63	..	..	..	..	122	114	107	63
62	..	..	109	..	..	..	..	62
61	110	101	..	124	..	..	106	61
60	..	..	..	..	121	..	..	60
59	..	..	108	..	..	113	105	59
58	..	100	..	..	120	..	104	58
57	109	..	107	..	..	..	102-103	57
56	..	99	..	..	119	..	..	56
55	..	..	..	..	..	..	..	55
54	..	..	106	..	118	112	..	54
53	..	..	..	121-123	117	..	..	53
52	108	98	..	..	..	111	..	52
51	..	..	..	..	..	..	101	51
50	..	..	..	..	116	110	..	50

GENERAL APTITUDE TEST BATTERY

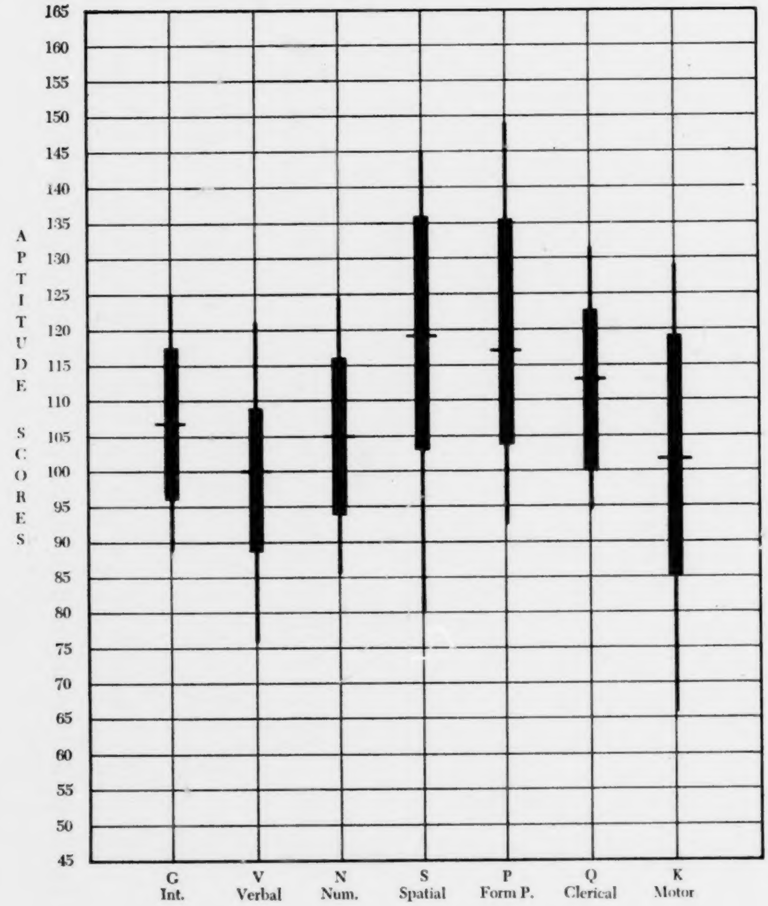
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

POWER AND HOME ELECTRICITY

(Continued)

Percentile	G	V	N	S	P	Q	K	Percentile
49	107	..	105	120	..	..	..	49
48	..	97	..	..	115	..	..	48
47	106	..	..	..	114	..	..	47
46	..	96	..	..	113	109	100	46
45	..	..	..	118-119	..	..	..	45
44	..	95	..	..	112	..	..	44
43	105	..	104	..	..	108	99	43
42	..	..	..	..	..	..	..	42
41	..	..	..	117	111	..	..	41
40	..	94	103	..	..	..	98	40
39	104	..	..	..	..	107	..	39
38	..	..	..	115-116	110	..	..	38
37	..	..	102	..	..	106	..	37
36	..	93	..	..	..	105	97	36
35	..	..	..	..	109	..	..	35
34	103	..	101	114	..	..	..	34
33	..	..	..	..	..	..	..	33
32	..	92	..	..	108	..	96	32
31	..	..	100	..	..	104	..	31
30	102	..	..	111-113	107	..	..	30
29	..	..	..	110	..	..	95	29
28	101	91	..	108-109	106	102-103	..	28
27	..	..	99	..	105	..	94	27
26	..	..	..	..	104	..	..	26
25	100	90	..	..	103	..	93	25
24	..	..	98	107	..	101	..	24
23	..	89	..	..	102	..	92	23
22	..	..	97	..	101	..	..	22
21	99	..	96	105-106	100	..	91	21
20	..	88	..	..	99	..	..	20
19	98	..	95	104	..	100	90	19
18	..	..	..	..	98	..	89	18
17	..	..	..	102-103	..	..	..	17
16	97	87	..	101	97	99	88	16
15	..	..	94	..	..	..	87	15
14	96	86	..	98-100	96	98	..	14
13	95	..	93	97	95	..	86	13
12	..	..	92	95-96	..	..	85	12
11	..	85	91	92-94	94	97	83-84	11
10	94	..	90	..	93	..	82	10
9	93	..	..	91	..	96	81	9
8	92	84	89	89-90	92	95	79-80	8
7	90-91	..	88	88	91	94	78	7
6	89	83	85-87	85-87	88-90	93	76-77	6
5	87-88	82	84	84	85-87	91-92	74-75	5
4	84-86	81	83	81-83	84	89-90	73	4
3	83	80	82	78-80	83	88	72	3
2	81-82	74-79	77-81	71-77	72-82	87	66-71	2
1	66-80	63-73	72-76	65-70	65-71	84-86	37-65	1
	N=207 M=107.88 SD=12.43	N=207 M= 97.14 SD=10.19	N=207 M=106.36 SD=13.39	N=207 M=117.73 SD=17.61	N=207 M=115.68 SD=18.13	N=207 M=110.55 SD=11.87	N=207 M=101.66 SD=15.74	

Printing and Graphic Arts



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

PRINTING AND GRAPHIC ARTS

Percentile	G	V	N	S	P	Q	K	Percentile
99	136	126-133	130-136	154-156	156-162	137-141	135-144	99
98	135	..	129	153	155	..	134	98
97	133-134	125	126-128	148-152	152-154	136	133	97
96	128-132	123-124	125	147	150-151	134-135	132	96
95	123-127	120-122	..	144-146	149	130-133	127-131	95
94	..	118-119	124	143	..	129	126	94
93	..	..	123	..	148	..	..	93
92	122	117	122	141-142	147	128	125	92
91	..	115-116	121	..	145-146	126-127	124	91
90	..	112-114	..	..	..	..	..	90
89	121	110-111	..	140	144	125	123	89
88	120	..	120	..	143	124	122	88
87	119	..	119	..	138-142	..	121	87
86	..	..	118	138-139	137	123	..	86
85	..	109	..	..	..	..	120	85
84	118	..	116-117	137	136	..	..	84
83	..	..	..	..	..	..	..	83
82	117	..	115	134-136	135	..	119	82
81	..	..	..	133	134	122	118	81
80	116	..	114	131-132	..	..	..	80
79	..	108	..	..	..	121	117	79
78	..	..	..	130	133	..	..	78
77	..	..	..	..	..	120	116	77
76	115	107	113	128-129	..	..	..	76
75	..	..	..	..	132	..	115	75
74	114	..	..	127	131	119	..	74
73	..	..	..	..	..	..	..	73
72	..	106	112	..	130	..	114	72
71	..	..	..	125-126	128-129	..	113	71
70	113	..	..	..	126-127	118	112	70
69	..	105	111	..	125	..	111	69
68	..	..	..	..	..	..	..	68
67	..	104	..	..	124	116-117	110	67
66	112	..	110	..	123	..	109	66
65	..	103	..	..	122	..	..	65
64	..	..	..	..	..	115	108	64
63	..	..	..	124	..	..	..	63
62	111	..	109	..	121	..	..	62
61	..	102	..	..	120	..	..	61
60	..	..	..	..	..	..	107	60
59	110	..	..	..	119	..	..	59
58	..	..	..	..	..	..	..	58
57	109	101	108	..	..	114	..	57
56	..	..	107	..	118	..	106	56
55	..	..	..	121-123	..	..	105	55
54	108	..	106	..	..	..	104	54
53	..	..	..	..	..	..	103	53
52	..	100	..	120	117	..	102	52
51	..	..	105	..	..	..	..	51
50	..	..	..	..	..	113	..	50

GENERAL APTITUDE TEST BATTERY

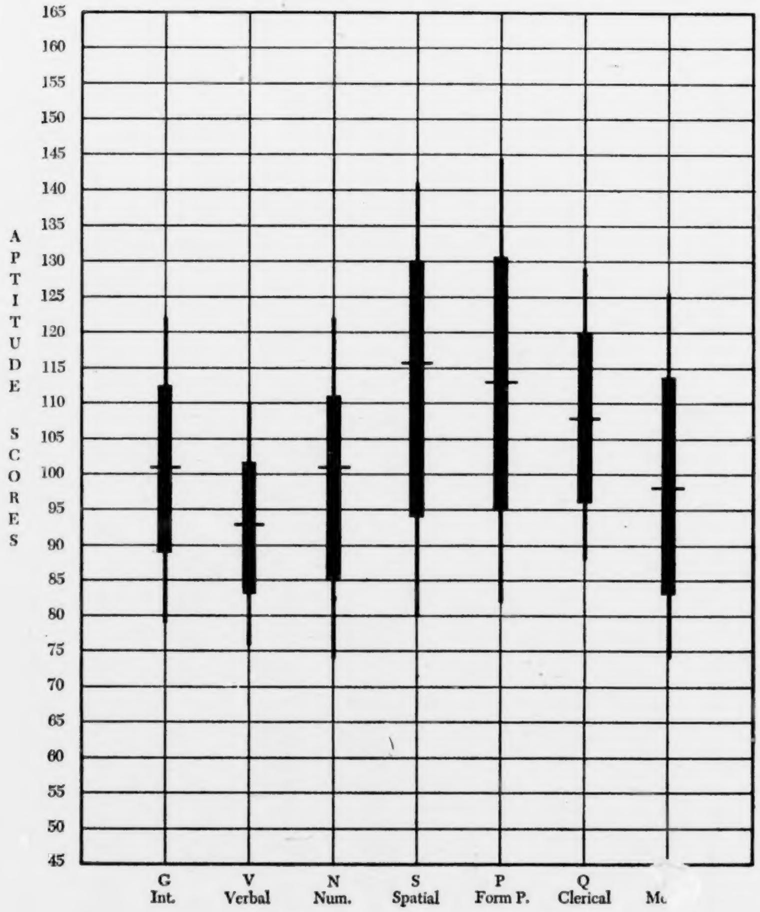
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

PRINTING AND GRAPHIC ARTS

(Continued)

Percentile	G	V	N	S	P	Q	K	Percentile
49	107	..	..	118-119	..	..	..	49
48	..	..	..	..	..	..	101	48
47	..	..	104	..	116	..	..	47
46	..	99	..	..	..	..	..	46
45	..	..	..	117	..	..	..	45
44	106	..	103	..	..	112	100	44
43	..	..	..	..	..	..	..	43
42	..	..	..	..	115	..	99	42
41	105	98	..	115-116	..	110-111	98	41
40	..	..	..	..	..	..	..	40
39	..	..	102	..	114	109	97	39
38	..	..	..	114	..	..	..	38
37	..	..	..	..	113	..	95-96	37
36	104	97	101	..	..	..	92-94	36
35	..	..	..	111-113	112	108	..	35
34	..	..	..	..	111	..	..	34
33	..	..	..	..	..	..	..	33
32	103	96	100	110	110	..	91	32
31	..	..	..	..	109	..	..	31
30	..	..	..	108-109	..	..	..	30
29	102	95	99	..	108	..	90	29
28	..	..	..	..	..	107	..	28
27	101	..	..	..	..	..	..	27
26	100	94	98	..	107	..	..	26
25	..	..	..	107	..	106	89	25
24	..	93	97	..	..	..	..	24
23	99	..	..	..	..	105	..	23
22	..	..	..	..	106	..	..	22
21	98	92	96	..	105	104	88	21
20	..	..	..	105-106	..	102-103	87	20
19	97	91	..	..	..	101	..	19
18	..	..	..	104	104	..	..	18
17	..	90	95	..	..	100	86	17
16	96	88-89	94	102-103	103	..	82-85	16
15	..	85-87	93	101	101-102	..	79-81	15
14	..	..	..	98-100	100	..	..	14
13	95	84	..	97	99	..	78	13
12	..	..	..	95-96	98	99	..	12
11	94	82-83	92	94	97	..	74-77	11
10	..	81	..	89-93	..	..	73	10
9	92-93	..	..	85-88	95-96	98	71-72	9
8	..	80	91	84	94	97	..	8
7	91	..	89-90	82-83	..	..	70	7
6	90	77-79	87-88	81	93	96	68-69	6
5	89	76	86	..	..	94-95	65-67	5
4	..	75	77-85	79-80	92	93	63-64	4
3	88	74	76	78	91	..	62	3
2	87	70-73	73-75	75-77	90	90-92	56-61	2
1	84-86	68-69	69-72	74	80-89	87-89	49-55	1
	N=80 M=107.47 SD=10.93	N=80 M= 99.26 SD=12.28	N=80 M=105.01 SD=12.11	N=80 M=117.30 SD=18.19	N=80 M=118.64 SD=17.09	N=80 M=112.34 SD=10.88	N=80 M=100.57 SD=19.01	

Welding



A P T I T U D E S C O R E S
165
160
155
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75
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65
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55
50
45
G Int.
V Verbal
N Num.
S Spatial
P Form P.
Q Clerical
M

GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

WELDING

Percentile	G	V	N	S	P	Q	K	Percentile
99	133-139	119-125	130-141	148-153	153-162	138-146	136-144	99
98	128-132	115-118	126-129	144-147	149-152	134-137	133-135	98
97	125-127	112-114	125	..	147-148	131-133	130-132	97
96	123-124	111	123-124	143	146	130	127-129	96
95	122	110	122	140-142	144-145	129	125-126	95
94	119-121	109	121	138-139	143	128	124	94
93	118	..	120	137	140-142	126-127	121-123	93
92	..	108	118-119	..	138-139	125	..	92
91	117	107	116-117	134-136	137	..	120	91
90	116	106	..	..	136	124	..	90
89	115	105	115	..	..	..	118-119	89
88	..	104	114	133	135	..	..	88
87	..	103	113	..	134	123	117	87
86	114	..	112	..	133	122	..	86
85	..	..	..	131-132	132	121	115-116	85
84	113	102	111	130	..	120	114	84
83	..	..	..	..	130-131	..	..	83
82	112	101	..	128-129	..	119	113	82
81	111	..	110	127	129	..	112	81
80	..	..	..	..	..	118	..	80
79	..	100	..	125-126	128	..	111	79
78	110	..	109	..	127	116-117	..	78
77	..	..	..	..	126	..	110	77
76	..	99	..	..	125	115	..	76
75	..	..	108	..	..	..	109	75
74	109	..	..	..	..	..	108	74
73	..	..	..	124	124	..	..	73
72	108	..	..	..	123	..	107	72
71	..	98	..	..	122	..	..	71
70	..	..	107	..	..	114	106	70
69	107	..	..	..	121	..	105	69
68	..	..	..	..	..	..	104	68
67	..	97	106	121-123	120	..	..	67
66	..	..	..	..	..	113	..	66
65	..	..	..	..	119	..	103	65
64	106	..	105	120	..	..	..	64
63	..	..	..	..	118	112	102	63
62	..	96	..	..	..	..	..	62
61	105	..	104	..	..	111	..	61
60	..	..	..	118-119	117	..	..	60
59	..	..	..	..	..	..	..	59
58	104	95	..	..	..	110	101	58
57	..	..	103	..	116	..	..	57
56	..	..	..	..	115	..	..	56
55	103	..	..	117	..	109	..	55
54	..	94	102	..	114	..	100	54
53	..	..	..	..	..	..	..	53
52	102	..	..	..	..	..	99	52
51	..	..	101	..	113	..	..	51
50	..	..	..	115-116	..	108	98	50

GENERAL APTITUDE TEST BATTERY

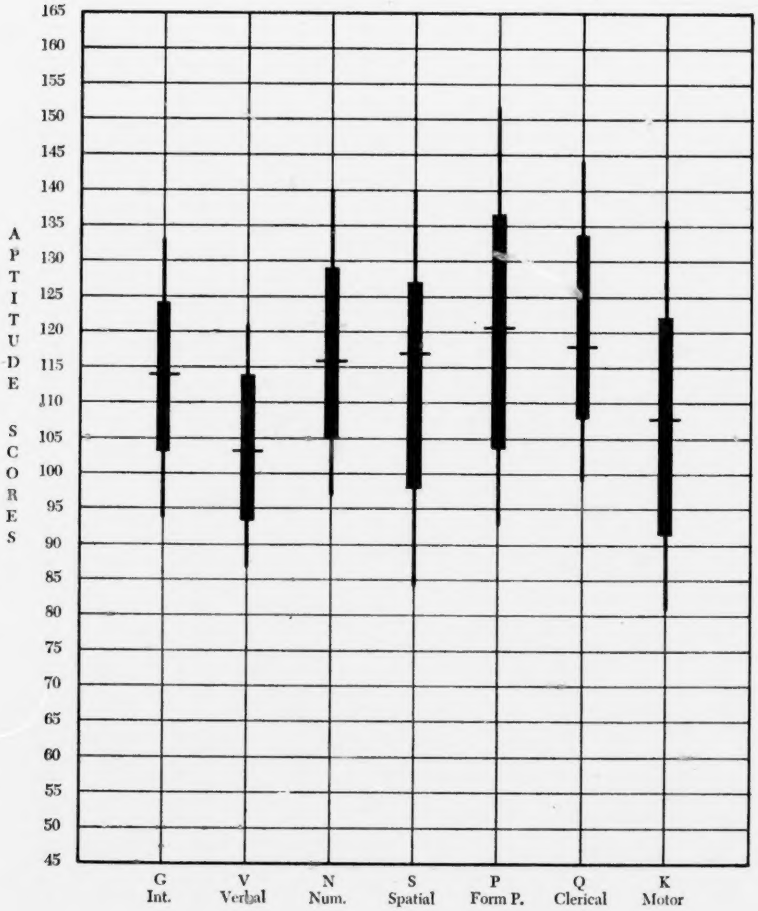
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

WELDING

(Continued)

Percentile	G	V	N	S	P	Q	K	Percentile
49	101	93	..	..	..	..	..	49
48	..	..	..	..	112	..	..	48
47	..	..	100	114	..	..	97	47
46	..	92	..	..	111	..	..	46
45	..	..	99	..	..	107	..	45
44	100	..	..	..	110	..	96	44
43	..	91	98	111-113	..	..	..	43
42	..	..	..	..	109	106	..	42
41	99	..	..	..	108	105	95	41
40	..	..	..	..	107	..	..	40
39	..	..	97	110	106	..	..	39
38	..	90	..	..	..	104	94	38
37	98	..	..	..	105	..	92-93	37
36	..	..	..	108-109	..	102-103	..	36
35	..	..	96	..	..	..	91	35
34	97	..	..	..	104	101	..	34
33	..	89	..	..	..	..	90	33
32	96	..	95	..	103	..	..	32
31	..	..	..	107	..	..	89	31
30	95	..	94	..	102	100	88	30
29	..	..	93	..	..	..	..	29
28	..	88	..	..	..	..	..	28
27	94	..	..	..	101	99	87	27
26	..	..	92	105-106	..	..	..	26
25	..	..	..	104	100	..	..	25
24	..	..	..	..	..	..	..	24
23	93	87	91	102-103	99	98	86	23
22	..	..	90	..	..	..	..	22
21	92	86	89	101	98	..	85	21
20	..	85	..	98-100	97	..	..	20
19	..	..	88	95-97	96	97	84	19
18	91	84	..	..	..	..	83	18
17	90	83	86-87	94	95	..	..	17
16	89	..	85	..	..	96	..	16
15	..	82	..	92-93	94	95	82	15
14	88	..	84	..	92-93	..	..	14
13	87	81	83	91	91	94	..	13
12	86	..	82	..	90	..	81	12
11	85	80	..	89-90	89	93	80	11
10	84	..	79-81	..	88	92	..	10
9	..	79	78	88	87	..	79	9
8	83	..	..	85-87	86	91	78	8
7	82	78	77	84	85	..	77	7
6	80-81	77	75-76	82-83	84	89-90	75-76	6
5	79	76	74	79-81	81-83	88	74	5
4	78	75	71-73	75-78	80	..	72-73	4
3	..	73-74	69-70	74	77-79	86-87	69-71	3
2	75-77	67-72	67-68	69-73	74-76	82-85	63-68	2
1	61-74	65-66	59-66	55-68	60-73	65-81	62	1
	N=254 M=101.26 SD=12.52	N=254 M= 92.96 SD=10.33	N=254 M= 99.49 SD=13.99	N=254 M=113.02 SD=17.78	N=254 M=112.38 SD=18.51	N=254 M=107.76 SD=12.74	N=254 M= 98.31 SD=15.76	

Accounting


A P T I T U D E S C O R E S
165
160
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V
Verbal
N
Num.
S
Spatial
P
Form P.
Q
Clerical
K
Motor

GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

ACCOUNTING

Percentile	G	V	N	S	P	Q	K	Percentile
99	139-144	131-135	145-150	150-156	166-175	155-171	142-167	99
98	136-138	126-130	143-144	147-149	162-165	151-154	141	98
97	135	124-125	142	144-146	158-161	148-150	140	97
96	134	122-123	141	141-143	155-157	146-147	138-139	96
95	133	121	140	140	150-154	143-145	135-137	95
94	132	120	137-139	138-139	147-149	142	134	94
93	131	119	136	137	145-146	141	133	93
92	..	118	135	134-136	..	140	132	92
91	130	..	134	133	144	139	130-131	91
90	128-129	117	133	131-132	142-143	..	129	90
89	127	..	132	..	141	137-138	128	89
88	..	116	..	..	140	..	..	88
87	126	..	131	130	139	136	126-127	87
86	..	115	130	..	..	135	125	86
85	125	..	..	128-129	138	..	124	85
84	124	..	129	..	137	134	123	84
83	..	112-114	..	..	..	..	122	83
82	..	111	..	127	136	133	121	82
81	123	..	128	..	135	132	..	81
80	..	110	..	..	..	..	..	80
79	..	..	127	..	134	131	120	79
78	122	..	126	125-126	..	..	..	78
77	..	109	..	..	133	130	..	77
76	..	..	125	..	..	..	119	76
75	121	..	..	..	132	129	..	75
74	..	..	..	..	..	..	118	74
73	..	..	124	..	131	..	..	73
72	120	..	..	..	130	128	..	72
71	..	..	123	124	129	127	117	71
70	119	108		..	..	126	..	70
69	..	..	..	..	..	..	116	69
68	..	..	122	..	128	125	..	68
67	118	..	..	..	127	..	115	67
66	..	107	..	..	..	..	..	66
65	..	..	..	..	126	124	114	65
64	..	..	121	..	..	..	..	64
63	117	..	..	121-123	125	123	113	63
62	..	106	120	..	..	..	..	62
61	..	..	..	..	..	..	..	61
60	..	..	..	..	124	122	112	60
59	116	..	119	..	..	121	..	59
58	..	105	..	120	..	..	..	58
57	..	..	..	..	123	120	111	57
56	..	..	118	..	..	..	..	56
55	115	..	..	..	..	..	110	55
54	..	104	117	118-119	122	..	..	54
53	..	..	..	..	..	119	109	53
52	..	..	..	..	..	..	..	52
51	114	103	116	..	121	..	..	51
50	..	..	..	117	..	..	108	50

GENERAL APTITUDE TEST BATTERY

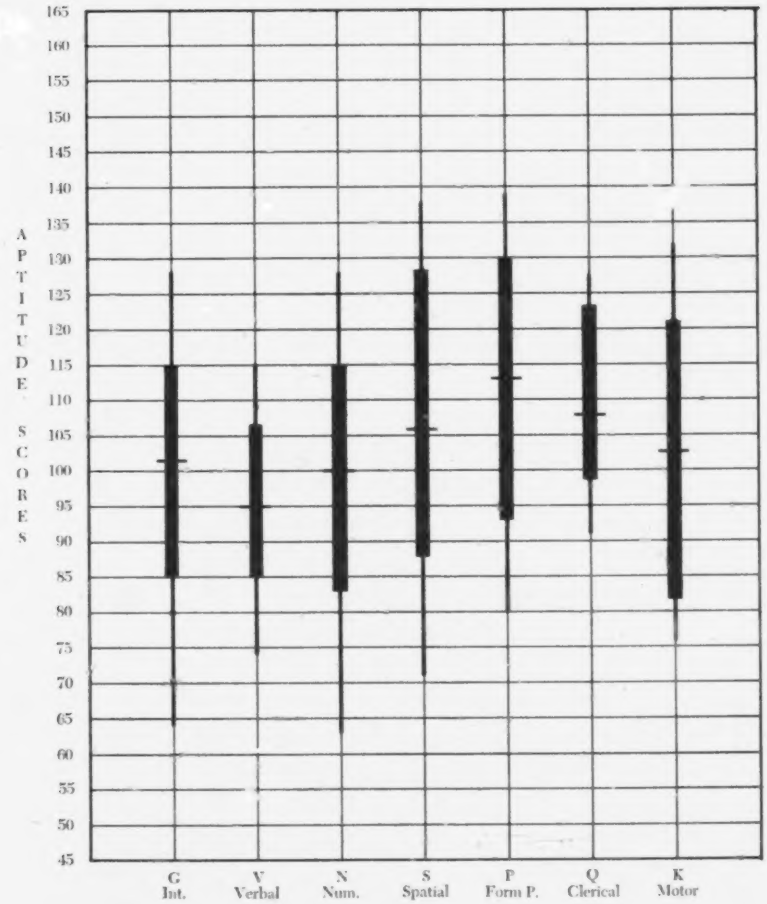
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

ACCOUNTING

(Continued)

Per-centile	G	V	N	S	P	Q	K	Per-centile
49	..	..	..	..	120	..	..	49
48	..	102	..	..	..	118	107	48
47	113	..	..	115-116	119	..	..	47
46	..	101	115	..	..	..	106	46
45	112	..	..	..	118	116-117	..	45
44	..	..	..	114	..	..	105	44
43	..	..	..	..	117	..	104	43
42	..	..	..	..	..	115	..	42
41	111	100	114	..	116	..	103	41
40	..	..	..	111-113	..	..	..	40
39	..	..	..	..	115	..	..	39
38	..	..	113	..	..	..	102	38
37	110	99	..	..	114	..	..	37
36	..	..	..	110	..	..	..	36
35	..	..	112	..	113	114	101	35
34	..	98	..	..	..	..	..	34
33	..	..	111	..	112	..	..	33
32	109	..	..	108-109	111	..	100	32
31	..	..	..	..	..	..	99	31
30	..	97	110	107	..	113	98	30
29	108	..	..	..	110	..	..	29
28	..	..	..	105-106	..	..	97	28
27	..	..	109	..	109	..	..	27
26	107	96	..	..	..	112	96	26
25	..	..	..	104	108	..	..	25
24	106	..	108	..	..	111	95	24
23	..	..	..	102-103	107	..	..	23
22	105	..	107	..	106	110	94	22
21	..	95	..	..	..	..	93	21
20	104	..	..	101	105	109	..	20
19	..	..	106	..	..	..	92	19
18	..	94	..	98-100	104	108	..	18
17	103	..	..	..	..	..	91	17
16	..	93	105	..	103	..	..	16
15	102	..	..	97	..	..	90	15
14	..	..	104	..	102	107	89	14
13	101	92	..	95-96	101	..	..	13
12	..	..	103	92-94	100	106	88	12
11	100	91	..	..	..	105	87	11
10	99	..	102	91	99	..	..	10
9	..	90	101	..	98	104	86	9
8	97-98	..	100	89-90	97	101-103	85	8
7	96	89	99	88	95-96	100	83-84	7
6	95	88	98	85-87	94	..	82	6
5	94	87	..	84	93	99	81	5
4	93	85-86	96-97	82-83	92	98	77-80	4
3	91-92	84	95	79-81	90-91	97	73-76	3
2	87-90	80-83	93-94	75-78	88-89	93-96	63-72	2
1	77-86	74-79	67-92	71-74	67-87	81-92	35-62	1
	N=398 M=113.52 SD=11.43	N=398 M=103.02 SD=10.48	N=398 M=116.78 SD=12.38	N=398 M=114.38 SD=16.20	N=398 M=120.52 SD=17.54	N=398 M=119.98 SD=13.63	N=398 M=107.18 SD=17.56	

Chefs and Cooks



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

CHEFS AND COOKS

Percentile	G	V	N	S	P	Q	K	Percentile
99	..	129	132	150	147	143	140	99
98	129	125-128	130-131	143-149	142-146	139-142	133-139	98
97	..	120-124	129	141-142	..	130-138	..	97
96	..	119	..	140	141	129	..	96
95	128	112-118	128	138-139	138-140	127-128	132	95
94	..	111	..	137	137	..	..	94
93	123-127	110	..	134-136	136	126	..	93
92	121-122	..	127	133	135	..	131	92
91	120	..	..	..	134	..	130	91
90	..	109	122-126	131-132	..	125	129	90
89	118-119	..	119-121	..	133	..	127-128	89
88	117	..	..	..	..	124	126	88
87	..	..	118	130	132	..	125	87
86	..	..	..	..	..	..	124	86
85	116	108	..	..	131	..	123	85
84	..	107	115-117	128-129	..	123	121-122	84
83	..	..	..	127	130	..	120	83
82	115	106	114	125-126	129	..	119	82
81	..	..	..	..	128	..	..	81
80	114	105	..	124	126-127	..	118	80
79	..	..	113	..	..	..	..	79
78	113	104	..	..	125	122	117	78
77	..	..	112	121-123	..	..	116	77
76	..	..	..	120	124	..	..	76
75	..	103	111	118-119	..	120-121	115	75
74	112	..	110	..	..	..	..	74
73	..	..	..	117	123	..	..	73
72	..	..	109	..	..	119	114	72
71	111	..	..	..	..	..	..	71
70	110	102	108	115-116	..	115-118	113	70
69	109	..	..	..	122	..	112	69
68	108	..	107	114	..	..	..	68
67	..	..	..	..	..	..	111	67
66	..	101	106	111-113	121	114	110	66
65	107	..	..	..	..	..	..	65
64	..	..	..	..	..	..	..	64
63	..	100	..	..	..	..	..	63
62	106	..	105	..	120	..	109	62
61	105	99	..	110	..	113	..	61
60	..	..	..	..	..	..	..	60
59	..	..	104	..	..	..	108	59
58	..	98	..	..	119	112	107	58
57	104	..	..	108-109	..	110-111	105-106	57
56	..	97	..	..	117-118	..	104	56
55	..	..	103	..	116	..	..	55
54	..	..	..	..	..	..	..	54
53	103	96	..	..	115	109	..	53
52	102	..	..	107	114	..	103	52
51	..	95	100-102	..	..	..	..	51
50	..	..	..	..	113	..	..	50

GENERAL APTITUDE TEST BATTERY

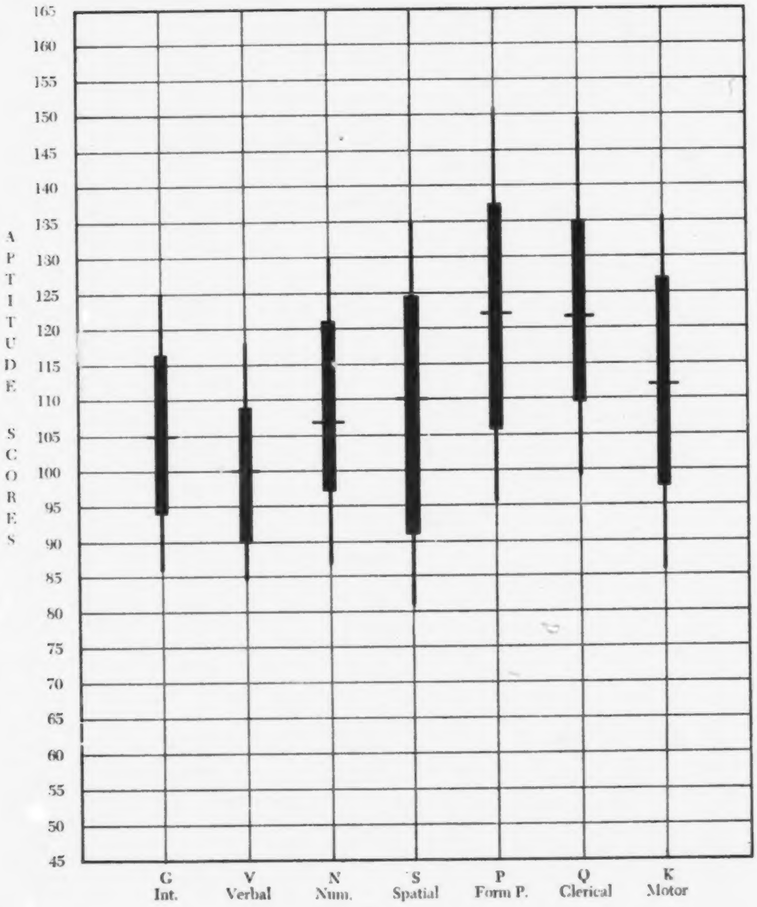
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

CHEFS AND COOKS

(Continued)

Percentile	G	V	N	S	P	Q	K	Percentile
49	..	..	..	..	..	108	..	49
48	101	..	..	105-106	..	..	102	48
47	..	94	..	..	112	107	..	47
46	..	..	..	..	..	106	..	46
45	..	..	..	..	111	105	..	45
44	100	..	..	..	109-110	..	101	44
43	..	93	99	104	108	..	..	43
42	..	..	..	..	..	..	..	42
41	99	..	..	..	..	..	100	41
40	..	..	..	..	..	104	..	40
39	98	..	..	102-103	107	..	99	39
38	..	92	..	..	106	..	98	38
37	97	..	..	..	..	..	..	37
36	..	..	..	..	..	102-103	97	36
35	96	..	..	..	105	..	..	35
34	..	..	98	101	..	101	96	34
33	..	91	..	..	103-104	..	95	33
32	95	..	..	..	..	..	..	32
31	..	..	97	..	102	..	94	31
30	93-94	90	..	98-100	..	..	93	30
29	..	..	96	..	..	100	..	29
28	..	89	92-95	97	101	..	92	28
27	..	..	91	..	..	..	..	27
26	92	..	..	95-96	..	..	91	26
25	..	..	..	92-94	99-100	..	87-90	25
24	..	88	90	..	98	..	..	24
23	..	..	..	..	..	..	..	23
22	91	..	..	91	97	99	..	22
21	89-90	..	89	..	..	..	86	21
20	88	87	85-88	89-90	96	..	..	20
19	87	..	..	..	95	98	..	19
18	86	86	84	..	..	..	85	18
17	..	..	..	88	94	..	84	17
16	85	84-85	81-83	..	93	..	82-83	16
15	..	83	..	85-87	92	97	81	15
14	84	..	80	..	..	..	..	14
13	82-83	82	79	..	89-91	..	80	13
12	81	..	78	84	..	..	..	12
11	80	77-81	76-77	..	88	..	79	11
10	71-79	76	..	82-83	..	96	..	10
9	70	..	75	81	87	..	78	9
8	66-69	75	..	75-80	..	95	..	8
7	65	..	67-74	74	83-86	94	77	7
6	..	74	66	..	82	..	..	6
5	..	..	61-65	69-73	79-81	89-93	76	5
4	..	..	60	68	78	..	..	4
3	64	73	57-59	66-67	74-77	88	75	3
2	62-63	67-72	54-56	65	69-73	80-87	32-74	2
1	61	66	53	..	68	79	31	1
	N=61 M=100.16 SD=16.60	N=61 M= 95.38 SD=12.35	N=61 M= 99.82 SD=17.58	N=61 M=106.39 SD=19.20	N=61 M=111.61 SD=17.76	N=61 M=109.30 SD=12.68	N=61 M=102.33 SD=19.15	

Clerical Training



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

CLERICAL TRAINING

Percentile	G	V	N	S	P	Q	K	Percentile
99	133-145	125-137	137-144	143-156	159-171	156-166	145-159	99
98	130-132	122-124	134-136	141-142	157-158	154-155	141-144	98
97	128-129	120-121	132-133	138-140	155-156	152-153	140	97
96	126-127	119	131	137	152-154	151	137-139	96
95	125	118	130	134-136	151	149-150	135-136	95
94	124	117	..	133	148-150	146-148	..	94
93	123	116	129	131-132	147	144-145	134	93
92	..	115	128	..	145-146	143	133	92
91	122	..	127	130	144	142	132	91
90	121	112-114	126	128-129	143	141	131	90
89	..	..	125	..	..	139-140	130	89
88	120	111	124	127	142	..	129	88
87	119	..	123	..	141	138	..	87
86	118	110	122	125-126	140	137	128	86
85	..	..	..	..	139	136	..	85
84	117	..	121	..	138	..	127	84
83	..	109	120	..	..	135	126	83
82	116	..	..	..	137	134	125	82
81	..	..	119	..	136	..	..	81
80	115	..	..	124	..	..	124	80
79	114	..	118	..	135	133	..	79
78	..	108	..	..	..	..	..	78
77	..	..	117	..	134	132	123	77
76	113	..	..	..	..	131	122	76
75	..	107	116	..	133	..	121	75
74	..	..	..	121-123	..	130	..	74
73	112	106	..	..	132	129	..	73
72	..	..	115	..	..	..	120	72
71	111	..	..	..	131	128	..	71
70	..	105	..	120	..	127	..	70
69	..	..	114	..	130	126	..	69
68	110	..	..	..	..	..	119	68
67	..	..	113	118-119	129	..	118	67
66	..	..	..	..	..	..	..	66
65	109	104	..	..	128	..	..	65
64	..	..	112	117	..	125	..	64
63	..	..	..	..	..	..	117	63
62	..	..	..	..	127	..	..	62
61	108	103	111	115-116	..	..	116	61
60	..	..	..	..	126	..	..	60
59	..	..	..	..	..	124	..	59
58	..	..	110	..	125	..	115	58
57	107	102	..	114	..	..	..	57
56	..	..	..	..	..	123	114	56
55	..	..	109	..	124	..	..	55
54	..	..	..	..	..	..	..	54
53	106	..	..	111-113	..	..	113	53
52	..	101	108	..	123	..	..	52
51	..	..	..	..	..	122	..	51
50	..	..	..	110	..	..	112	50

GENERAL APTITUDE TEST BATTERY

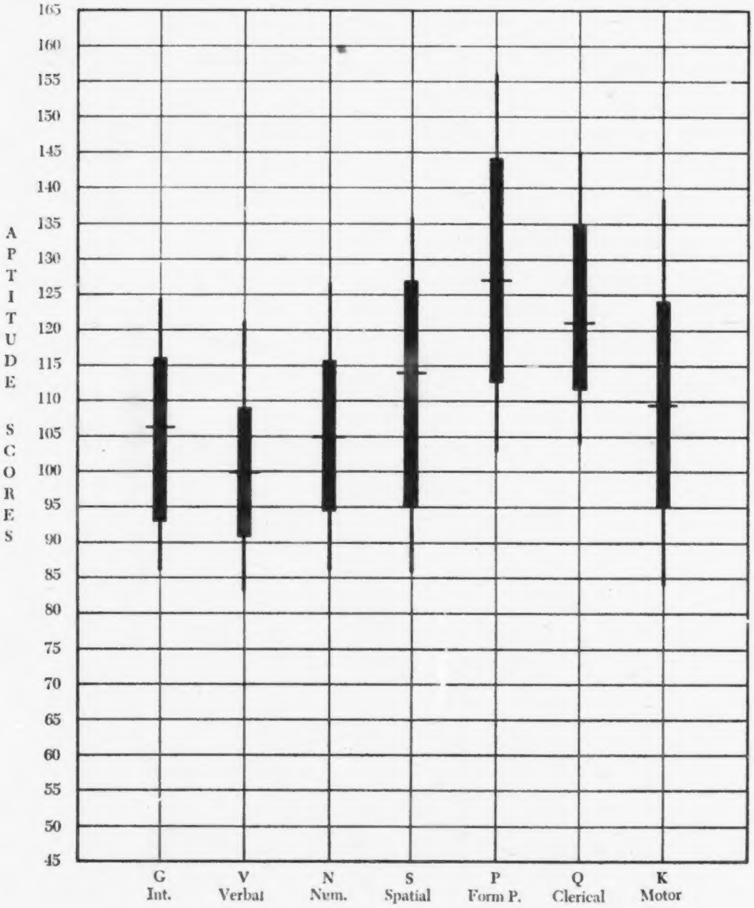
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

CLERICAL TRAINING

(Continued)

Percentile	G	V	N	S	P	Q	K	Percentile
49	105	100	107	..	122	121	..	49
48	..	..	..	108-109	..	..	111	48
47	..	..	..	..	121	..	..	47
46	104	99	..	..	..	120	110	46
45	..	..	106	..	120	..	..	45
44	..	..	..	107	..	..	109	44
43	103	98	..	..	119	..	..	43
42	..	..	105	..	..	..	108	42
41	102	..	..	..	..	119	..	41
40	..	97	..	105-106	118	..	..	40
39	..	..	..	..	..	..	107	39
38	..	..	104	..	117	..	..	38
37	101	..	..	..	..	..	..	37
36	..	..	103	104	116	118	106	36
35	..	96	..	..	..	116-117	..	35
34	100	..	..	..	115	..	105	34
33	..	..	102	..	..	115	..	33
32	..	..	..	102-103	114	..	104	32
31	99	..	..	..	..	..	..	31
30	..	95	..	101	113	114	103	30
29	..	..	101	..	..	..	102	29
28	98	..	..	..	112	..	..	28
27	..	..	..	98-100	..	..	..	27
26	97	94	100	..	111	..	..	26
25	..	..	..	97	..	113	101	25
24	..	..	..	..	..	..	..	24
23	96	93	99	..	110	..	..	23
22	..	..	..	95-96	109	..	..	22
21	..	..	..	..	..	112	100	21
20	95	92	98	94	108	..	99	20
19	..	..	..	92-93	107	111	..	19
18	94	91	97	..	..	110	98	18
17	..	..	..	..	..	..	..	17
16	..	90	..	91	106	109	97	16
15	93	..	96	..	..	..	96	15
14	..	..	95	89-90	105	108	95	14
13	92	89	..	..	104	107	94	13
12	..	..	94	..	103	106	93	12
11	91	88	93	88	102	105	92	11
10	..	..	..	..	101	104	91	10
9	90	87	92	85-87	100	101-103	90	9
8	89	86	91	84	99	..	88-89	8
7	88	..	90	82-83		100	87	7
6	87	85	88-89	..	97-98			6
5	86		87	81	95-96	99	86	5
4	85	84	85-86	78-80	94	97-98	84-85	4
3	84	83	81-84	75-77	91-93	95-96	82-83	3
2	82-83	81-82	79-80	74	83-90	93-94	76-81	2
1	73-81	70-80	50-78	61-73	42-82	78-92	45-75	1
	N=551 M=105.19 SD=11.80	N=551 M=100.27 SD=10.09	N=551 M=107.98 SD=12.98	N=551 M=109.26 SD=16.68	N=551 M=121.95 SD=17.06	N=551 M=121.90 SD=14.31	N=551 M=111.25 SD=15.64	

Cosmetology



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

COSMETOLOGY

Percentile	G	V	N	S	P	Q	K	Percentile
99	130-138	126-139	138-142	147-156	163-176	151-176	144-163	99
98	127-129	124-125	132-137	138-146	160-162	149-150	141-143	98
97	126	123	129-131	..	158-159	147-148	..	97
96	125	122	128	137	157	146	140	96
95	..	121	126-127	..	156	145	138-139	95
94	124	119-120	125	134-136	154-155	144	135-137	94
93	..	118	124	133	153	143	134	93
92	123	116-117	123	..	151-152	142	132-133	92
91	122	115	121-122	131-132	150	140-141	131	91
90	..	112-114	..	..	149	139	130	90
89	121	..	120	130	148	138	129	89
88	120	111	119	..	..	137	128	88
87	119	..	118	128-129	147	136	127	87
86	118	110	..	..	146	..	126	86
85	117	..	117	..	145	..	125	85
84	116	109	116	127	144	..	..	84
83	..	..	..	..	..	135	124	83
82	..	..	115	..	..	..	123	82
81	..	..	..	125-126	143	..	..	81
80	115	108	..	..	..	..	122	80
79	..	..	114	..	142	134	..	79
78	..	..	..	..	..	..	121	78
77	114	107	..	..	141	133	..	77
76	..	..	113	..	..	..	..	76
75	..	..	..	..	140	132	..	75
74	..	..	..	..	..	..	120	74
73	113	..	112	124	139	131	..	73
72	..	106	..	..	..	..	..	72
71	..	..	..	..	138	..	119	71
70	112	..	..	..	..	129-130	..	70
69	..	..	111	..	137	..	118	69
68	..	105	..	..	..	128	..	68
67	111	..	..	..	136	127	..	67
66	..	..	..	..	..	..	117	66
65	..	..	110	121-123	135	126	..	65
64	..	104	..	..	134	..	116	64
63	..	..	..	..	..	..	..	63
62	110	..	109	..	133	125	..	62
61	..	..	..	120	..	..	115	61
60	..	..	..	..	132	124	..	60
59	109	103	108	..	..	..	..	59
58	..	..	..	118-119	131	..	114	58
57	..	..	107	..	..	123	..	57
56	..	102	..	117	130	..	113	56
55	108	..	106	..	..	..	..	55
54	..	..	..	115-116	..	..	112	54
53	..	101	..	..	129	..	111	53
52	..	..	..	..	..	122	110	52
51	107	..	105	..	128	..	..	51
50	..	..	..	..	..	..	..	50

GENERAL APTITUDE TEST BATTERY

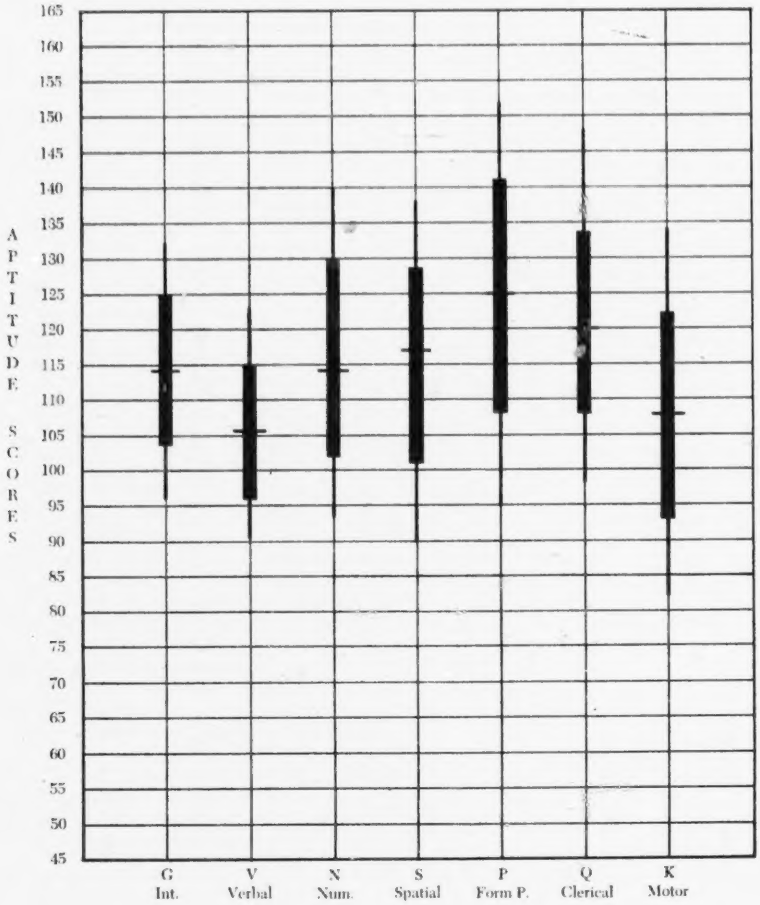
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

COSMETOLOGY

(Continued)

Per-centile	G	V	N	S	P	Q	K	Per-centile
49	106	100	..	114	127	121	..	49
48	..	..	..	..	..	..	109	48
47	..	..	104	..	..	120	..	47
46	105	..	..	..	126	..	..	46
45	..	99	..	..	..	..	108	45
44	..	..	..	111-113	..	..	..	44
43	..	..	103	..	125	..	..	43
42	104	98	..	110	..	..	107	42
41	..	..	..	..	..	119	..	41
40	..	..	..	..	124	..	106	40
39	103	97	..	108-109	..	..	..	39
38	..	..	102	..	..	..	105	38
37	102	..	..	..	123	..	..	37
36	..	..	..	107	122	..	104	36
35	101	96	101	..	..	..	103	35
34	..	..	..	..	121	118	102	34
33	..	..	..	..	..	..	..	33
32	100	..	100	105-106	120	..	..	32
31	..	95	..	..	..	116-117	..	31
30	99	..	99	104	119	..	101	30
29	..	..	..	..	..	..	..	29
28	98	..	..	..	118	115	..	28
27	..	94	98	102-103	117	..	100	27
26	97	..	..	..	..	..	..	26
25	..	..	..	..	116	..	99	25
24	..	..	..	101	..	114	..	24
23	96	..	97	..	115	..	98	23
22	..	93	..	..	..	..	97	22
21	..	..	..	98-100	..	113	..	21
20	94-95	92	..	..	114	..	96	20
19	..	..	96	97	..	..	..	19
18	..	91	95	..	113	112	..	18
17	93	..	..	95-96	..	..	95	17
16	..	..	94	..	112	111	..	16
15	..	90	93	..	111	110	..	15
14	..	..	..	94	110	..	94	14
13	92	89	92	..	..	109	93	13
12	..	..	..	..	109	108	91-92	12
11	91	88	91	92-93	..	..	90	11
10	90	..	..	91	108	107	89	10
9	89	87	90	..	107	..	87-88	9
8	..	86	..	89-90	106	106	..	8
7	88	..	88-89	88	104-105	105	86	7
6	87	84-85	87	..	..	..	85	6
5	..	83	86	85-87	103	104	84	5
4	85-86	..	85	84	102	..	82-83	4
3	84	82	83-84	79-83	100-101	102-103	79-81	3
2	81-83	80-81	76-82	75-78	95-99	100-101	73-78	2
1	76-80	76-79	69-75	71-74	83-94	93-99	62-72	1
	N=249 M=105.61 SD=11.72	N=249 M=100.53 SD=10.54	N=249 M=105.42 SD=12.18	N=249 M=112.64 SD=15.80	N=249 M=128.27 SD=16.2[illegible]	N=249 M=122.93 SD=12.74	N=249 M=109.82 SD=16.11	

Data Processing



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

DATA PROCESSING

Percentile	G	V	N	S	P	Q	K	Percentile
99	143-155	128-139	147-151	147-153	165-168	154-161	143-146	99
98	136-142	127	145-146	143-146	158-164	153	140-142	98
97	135	124-126	143-144	141-142	155-157	152	137-139	97
96	133-134	123	141-142	138-140	153-154	149-151	135-136	96
95	132	..	140	..	152	148	134	95
94	131	122	139	137	151	145-147	132-133	94
93	130	..	137-138	134-136	150	144	131	93
92	129	121	136	..	147-149	142-143	130	92
91	127-128	..	135	..	145-146	141	..	91
90	..	120	..	133	144	140	127-129	90
89	..	119	134	..	143	139	126	89
88	126	..	..	..	..	138	125	88
87	..	118	133	131-132	142	136-137	124	87
86	..	117	132	..	..	135	123	86
85	..	116	131	130	..	..	..	85
84	125	..	130	..	..	134	122	84
83	..	..	129	128-129	141	..	..	83
82	..	115	128	..	140	133	..	82
81	124	..	127	..	138-139	..	121	81
80	..	112-114	126	..	137	132	..	80
79	..	..	..	127	..	131	..	79
78	..	..	..	..	..	130	120	78
77	123	..	125	..	136	..	..	77
76	..	..	..	..	..	129	..	76
75	122	111	124	125-126	..	..	119	75
74	..	..	..	..	135	..	118	74
73	..	..	123	..	134	..	..	73
72	121	..	..	..	..	..	..	72
71	..	110	122	..	..	128	117	71
70	..	..	..	..	133	..	..	70
69	..	..	121	124	..	127	116	69
68	120	..	120	..	132	126	..	68
67	..	109	..	..	131	..	..	67
66	..	..	..	..	..	..	115	66
65	119	..	119	..	..	125	..	65
64	118	..	..	121-123	130	..	..	64
63	..	..	..	..	..	..	114	63
62	..	..	..	..	..	124	113	62
61	117	..	118	..	129	..	..	61
60	..	..	..	..	..	..	112	60
59	..	108	..	120	128	123	..	59
58	..	..	..	..	..	..	..	58
57	116	..	117	..	..	..	..	57
56	..	107	..	..	127	..	111	56
55	..	..	116	118-119	..	..	..	55
54	115	..	..	..	..	122	..	54
53	..	..	115	..	126	..	110	53
52	..	106	..	..	..	121	..	52
51	114	..	114	117	..	..	109	51
50	..	..	..	..	125	..	..	50

GENERAL APTITUDE TEST BATTERY

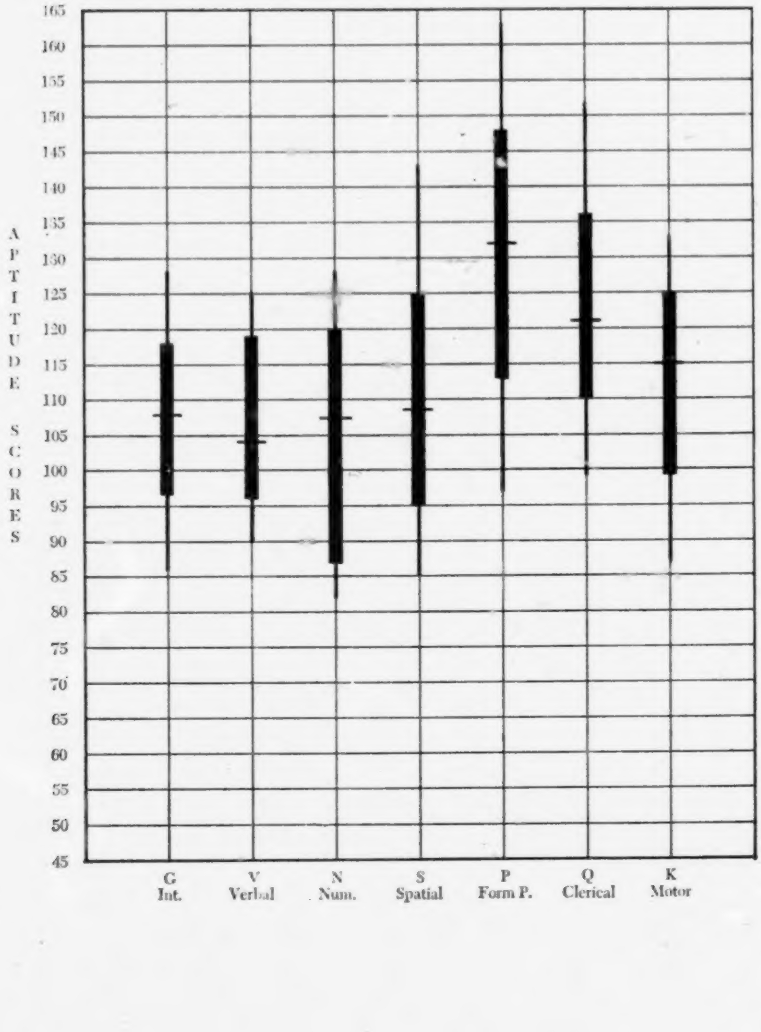
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

DATA PROCESSING

(Continued)

Percentile	G	V	N	S	P	Q	K	Percentile
49	..	..	..	..	..	120	108	49
48	113	105	..	..	124	..	..	48
47	..	..	113	..	..	..	..	47
46	..	..	..	115-116	123	..	107	46
45	..	104	112	..	..	..	..	45
44	112	..	..	...	..	119	..	44
43	..	..	..	..	122	..	106	43
42	..	103	111	114	..	..	..	42
41	111	..	..	..	121	..	105	41
40	..	..	110	..	..	..	..	40
39	..	102	..	..	120	118	104	39
38	..	..	..	..	119	..	..	38
37	110	..	109	111-113	..	116-117	103	37
36	..	..	..	..	118	115	..	36
35	..	101	..	..	..	..	..	35
34	109	..	108	..	..	..	102	34
33	..	..	..	110	..	114	..	33
32	108	..	..	..	117	..	..	32
31	..	100	..	..	..	..	..	31
30	..	..	107	..	..	..	101	30
29	107	..	..	108-109	116	113	..	29
28	..	..	..	..	..	..	..	28
27	..	99	106	..	115	..	..	27
26	..	..	..	107	..	..	100	26
25	106	..	..	..	113-114	112	..	25
24	..	98	105	..	..	111	99	24
23	..	..	..	105-106	112	..	98	23
22	105	.	..	..	..	..	97	22
21	..	..	..	..	..	110	96	21
20	104	97	104	104	..	..	95	20
19	..	..	..	..	111	..	94	19
18	..	..	103	..	..	109	..	18
17	..	96	..	102-103	110	108	93	17
16	103	..	102	..	108-109	106-107	..	16
15	..	..	..	101	..	..	92	15
14	102	95	..	..	107	105	91	14
13	..	..	101	98-100	103-106	..	90	13
12	..	94	..	97	102	102-104	89	12
11	101	93	100	95-96	101	101	87-88	11
10	..	..	..	..	99-100	..	86	10
9	100	92	99	94	98	100	..	9
8	99	..	98	..	..	.	85	8
7	98	..	97	92-93	97	99	84	7
6	97	91	95-96	91	96	..	83	6
5	96	..	93-94	..	95	98	82	5
4	95	90	92	88-90	94	..	80-81	4
3	92-94	89	90-91	84-87	91-93	97	78-79	3
2	88-91	86-88	84-89	78-83	84-90	90-96	77	2
1	85-87	78-85	75-83	74-77	78-83	81-89	62-76	1
	N=157 M=114.00 SD=11.47	N=157 M=105.52 SD=10.11	N=157 M=115.04 SD=13.98	N=157 M=115.61 SD=14.66	N=157 M=124.14 SD=17.00	N=157 M=120.77 SD=14.49	N=157 M=108.16 SD=15.37	

Dental Assistant



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

DENTAL ASSISTANT

Percentile	G	V	N	S	P	Q	K	Percentile
99	138	141	135	153	168	154	151	99
98	130-137	132-140	130-134	151-152	..	153	141-150	98
97	..	131	129	150	167	..	140	97
96	129	126-130	..	144-149	164-166	152	133-139	96
95	..	125	128	143	163	..	..	95
94	125-128	124	..	141-142	158-162	..	132	94
93	..	..	127	140	157	151	..	93
92	124	..	126	138-139	154-156	144-150	131	92
91	..	123	..	137	153	143	..	91
90	123	..	125	131-136	152	..	130	90
89	..	..	..	130	151	142	..	89
88	122	122	124	128-129	..	140-141	127-129	88
87	120-121	121	123	127	150	139	126	87
86	119	..	122	..	..	..	..	86
85	..	129	121	125-126	149	138	125	85
84	..	119	120	..	..	136-137	..	84
83	118	116-118	118-119	..	146-148	135	..	83
82	..	..	..	..	145	134	..	82
81	..	..	..	..	..	..	124	81
80	..	..	117	124	144	..	..	80
79	117	..	..	..	..	..	..	79
78	..	115	..	..	143	133	..	78
77	..	..	116	..	..	..	121-123	77
76	116	..	..	..	142	..	..	76
75	..	..	115	121-123	141	132	..	75
74	115	..	..	..	..	..	..	74
73	..	112-114	114	..	140	131	..	73
72	114	..	..	..	..	..	..	72
71	..	..	113	120	139	130	..	71
70	113	111	..	..	..	..	120	70
69	..	..	112	..	..	129	..	69
68	..	..	..	..	138	..	..	68
67	112	110	..	118-119	..	..	..	67
66	..	..		117	..	..	..	66
65	..	109	111	115-116	..	128	..	65
64	111	..	..	..	..	..	..	64
63	..	..	..	..	137	127	119	63
62	..	108	110	114	..	126	118	62
61	..	..	..	..	136	..	..	61
60	110	107	..	..	..	..	..	60
59	..	106	..	..	135	125	..	59
58	..	105	..	111-113	..	..	117	58
57	..	..	109	..	..	..	..	57
56	..	..	..	..	134	124	..	56
55	..	..	..	..	..	..	..	55
54	..	..	..	110	..	..	116	54
53	109	..	..	..	133	123	..	53
52	..	104	..	..	..	..	..	52
51	..	..	108	..	132	121-122	..	51
50	..	..	..	108-109	..	..	115	50

GENERAL APTITUDE TEST BATTERY

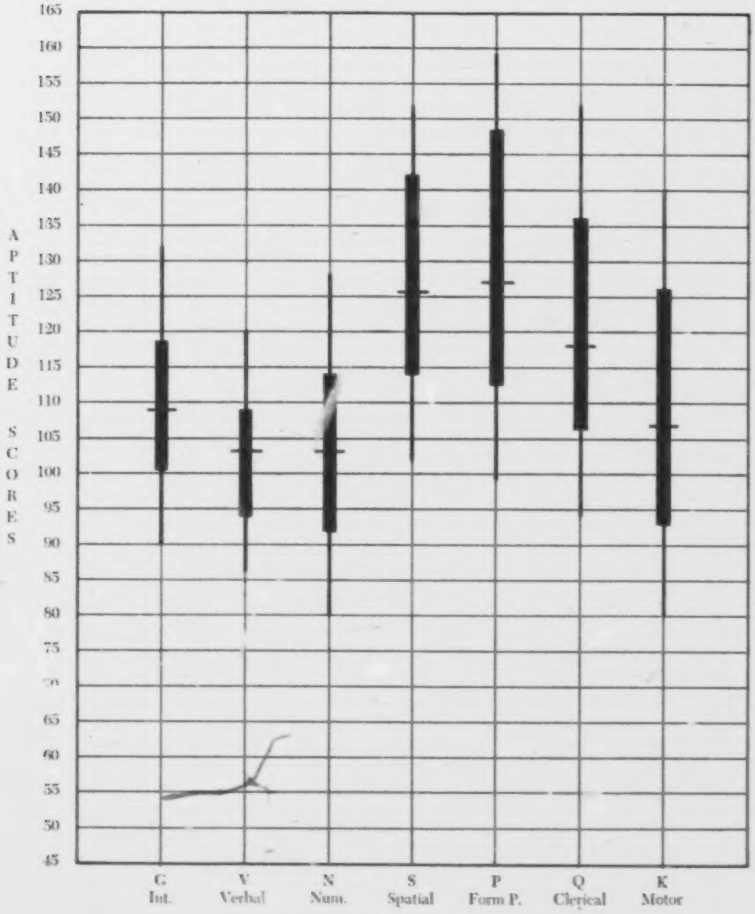
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

DENTAL ASSISTANT

(Continued)

Percentile	G	V	N	S	P	Q	K	Percentile
49	108	..	107	..	..	120	..	49
48	..	..	106	..	131	..	..	48
47	107	..	..	..	..	..	..	47
46	..	103	..	..	..	..	114	46
45	106	..	..	..	130	..	113	45
44	..	..	..	..	..	119	112	44
43	105	..	..	107	129	..	..	43
42	..	102	105	..	128	..	..	42
41	..	..	..	..	..	..	..	41
40	104	..	..	..	127	..	..	40
39	..	..	..	..	..	..	111	39
38	..	101	..	..	126	118	..	38
37	..	..	..	105-106	124-125	..	..	37
36	..	..	104	..	123	..	..	36
35	..	..	..	..	122	116-117	110	35
34	..	100	..	..	..	..	..	34
33	103	..	103	..	121	..	..	33
32	..	..	..	..	..	..	109	32
31	..	..	102	104	119-120	..	..	31
30	..	..	101	..	118	..	..	30
29	..	99	100	..	..	115	108	29
28	..	..	..	..	..	..	..	28
27	..	..	99	..	117	..	107	27
26	..	..	..	..	..	..	..	26
25	102	98	98	102-103	..	..	102-106	25
24	..	..	97	..	..	..	..	24
23	..	..	94-96	..	116	..	..	23
22	..	..	..	101	..	114	..	22
21	101	97	93	..	..	..	101	21
20	..	..	..	..	115	..	..	20
19	99-100	..	..	98-100	114	113	..	19
18	98	96	92	97	..	111-112	..	18
17	96-97	..	88-91	95-96	113	110	100	17
16	..	..	87	..	..	..	99	16
15	..	95	..	..	110-112	109	98	15
14	95	..	..	94	109	..	..	14
13	..	..	86	..	..	108	97	13
12	92-94	94	85	92-93	108	106-107	96	12
11	..	..	..	..	..	105	..	11
10	..	..	..	91	106-107	102-104	95	10
9	91	..	84	..	105	101	..	9
8	..	93	..	89-90	..	..	92-94	8
7	..	92	..	88	104	100	91	7
6	87-90	91	83	85-87	98-103	..	88-90	6
5	86	90	82	..	97	99	87	5
4	85	87-89	70-81	84	93-96	..	..	4
3	84	86	69	..	92	98	86	3
2	75-83	81-85	64-68	82-83	90-91	..	83-85	2
1	74	80	63	81	89	97	82	1
	N=52 M=107.60 SD=11.97	N=52 M=105.98 SD=11.71	N=52 M=105.46 SD=14.99	N=52 M=111.42 SD=16.05	N=52 M=129.90 SD=18.03	N=52 M=122.92 SD=14.0	N=52 [illegible]3.29 [illegible]3.63	

Interior Design and Sales Assistant



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

INTERIOR DESIGN AND SALES ASSISTANT

Percentile	G	V	N	S	P	Q	K	Percentile
99	139	135	136	156	..	161	149	99
98	135-138	128-134	130-135	154-155	163	158-160	141-148	98
97	134	127	129	..	..	157	..	97
96	133	120-126	..	153	159-162	152-156	..	96
95	132	..	128	..	..	..	140	95
94	126-131	119	123-127	147-152	158	151	..	94
93	125	116-118	122	144-146	..	145-150	133-139	93
92	124	..	121	..	157	144	132	92
91	123	115	120	..	153-156	..	131	91
90	122	..	..	..	152	143	..	90
89	121	112-114	119	..	150-151	140-142	130	89
88	..	..	..	..	..	139	..	88
87	120	111	116-118	143	..	137-138	129	87
86	..	..	..	..	149	..	128	86
85	..	110	115	..	..	136	127	85
84	119	..	..	..	..	..	126	84
83	..	..	..	..	..	..	125	83
82	118	109	114	..	..	135	..	82
81	..	..	113	141-142	..	134	124	81
80	117	..	112	..	148	..	123	80
79	..	..	..	..	..	133	122	79
78	..	..	..	140	..	132	121	78
77	116	..	..	..	147	131	120	77
76	..	108	111	..	146	130	119	76
75	..	..	..	..	143-145	129	..	75
74	115	..	..	134-139	140-142	..	..	74
73	..	..	..	..	..	128	..	73
72	..	107	110	..	139	127	118	72
71	114	..	..	133	..	126	..	71
70	..	..	..	..	..	..	..	70
69	113	106	..	131-132	138	125	..	69
68	..	..	109	..	..	..	..	68
67	..	..	..	..	137	..	117	67
66	..	..	..	..	135-136	..	..	66
65	112	105	..	..	134	124	116	65
64	..	..	..	..	..	..	..	64
63	..	..	108	..	133	..	..	63
62	..	..	107	130	..	..	115	62
61	..	..	..	..	132	12	..	61
60	..	..	106	..	131	..	..	60
59	..	..	..	..	..	..	114	59
58	111	104	..	..	130	..	113	58
57	..	..	..	..	129	..	112	57
56	..	..	105	128-129	..	122	110-111	56
55	110	..	..	..	128	..	..	55
54	..	..	..	..	..	121	109	54
53	..	..	..	127	..	120	..	53
52	109	103	104	..	..	119	108	52
51	..	..	..	..	127	..	..	51
50	..	..	..	125-126	..	..	..	50

GENERAL APTITUDE TEST BATTERY

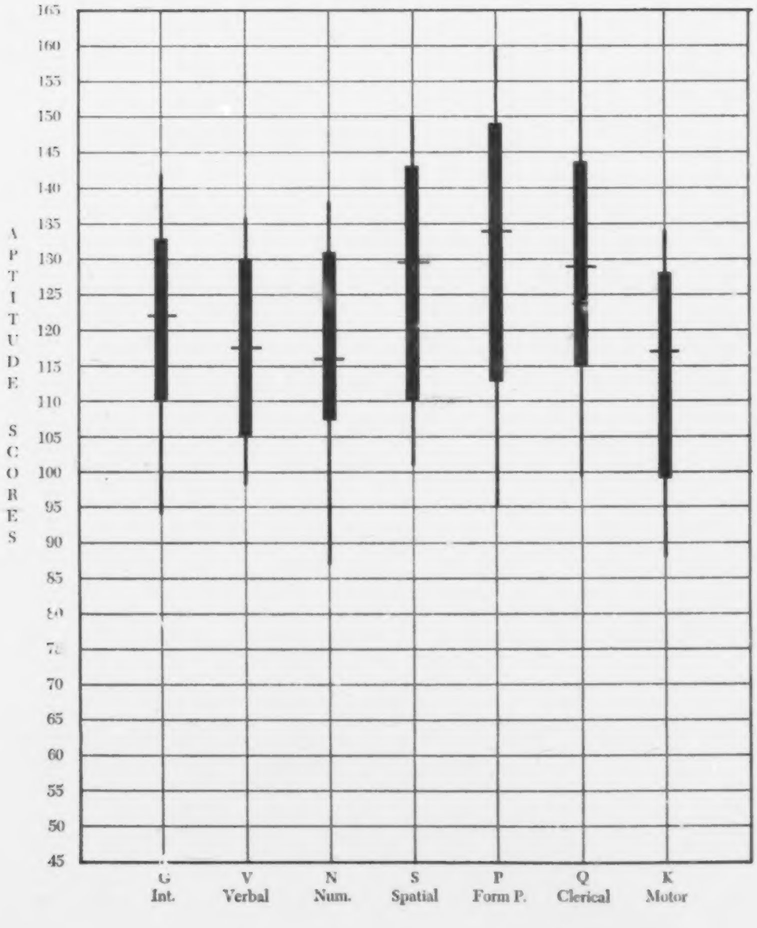
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

INTERIOR DESIGN AND SALES ASSISTANT

(Continued)

Percentile	G	V	N	S	P	Q	K	Percentile
49	..	..	103	..	..	118	107	49
48	..	..	..	..	..	..	..	48
47	..	..	..	..	126	..	..	47
46	..	..	..	..	..	116-117	106	46
45	..	102	..	..	..	..	..	45
44	108	..	102	..	..	115	..	44
43	..	..	..	..	..	..	105	43
42	..	..	..	..	125	114	..	42
41	..	..	..	..	..	..	..	41
40	..	..	..	124	124	..	..	40
39	..	101	101	..	..	..	104	39
38	..	..	..	..	123	113	..	38
37	..		..	..	..	..	..	37
36	107	.	..	..	122	..	10[illegible]	36
35	..	..	100	..	..	..	..	35
34	..	100	..	..	..	..	..	34
33	..	..	..	..	..	112	102	33
32	..	..	..	..	121	..	..	32
31	106	..	99	..	..	110-111	101	31
30	..	99	..	121-123	..	..	..	30
29	..	..	..	..	..	109	..	29
28	105	..	..	..	120	..	100	28
27	..	98	..	120	..	..	99	27
26	..	..	96-98	..	119	..	96-98	26
25	..	..	..	..	118	108	..	25
24	..	97	..	118-119	..	..	..	24
23	104	..	95	..	117	..	95	23
22	..	..	..	117	..	..	..	22
21	..	96	..	..	..	..	..	21
20	102-103	..	..	115-116	116	..	94	20
19	101	95	93-94	..	114-115	107	..	19
18	..	..	..	..	113	..	..	18
17	..		92	..	..	..	93	17
16	..	94	..	114	112	..	..	16
15	100	..	91	..	111	106	..	15
14	..	..	90	..	110	105	..	14
13	..	93	89	..	108-109	..	90-92	13
12	99	..	88	..	107	104	..	12
11	..	..	86-87	111-113	105-106	100-103	89	11
10	98	92	85	..	..	99	..	10
9	97	..	..	110	104	98	88	9
8	..	..	..	..	103	97	87	8
7	96	89-91	84	108-109	102	..	83-86	7
6	91-95	87-88	81-83	102-107	100-101	95-96	81-82	6
5	90	86	80	..	99	94	80	5
4	85-89	85	76-79	101	86-98	92-93	73-79	4
3	84	84	75	..	85	91	..	3
2	..	73-83	70-74	92-100	84	89-90	72	2
1	83	72	69	91	83	88	..	1
	N=54 M=109.65 SD=10.65	N=54 M=102.72 SD=10.08	N=54 M=103.41 SD=13.00	N=54 M=127.13 SD=13.53	N=54 M=128.62 SD=18.35	N=54 M=119.81 SD=16.23	N=54 M=108.85 SD=16.97	

Medical Lab Assistant



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

MEDICAL LABORATORY ASSISTANT

Percentile	G	V	N	S	P	Q	K	Percentile
99	145	143	..	..	168	167	146	99
98	144	138-142	146	153	167	166	137-145	98
97	143	137	..	..	166	165	136	97
96	..	136	139-145	151-152	161-165	..	135	96
95	142	..	138	150	160	164	134	95
94	141	..	135-137	148-149	159	157-163	133	94
93	140	135	134	..	158	156	..	93
92	..	..	..	..	155-157	154-155	132	92
91	139	..	133	..	..	153	..	91
90	136-138	134	..	147	154	151-152	131	90
89	135	..	..	..	..	150	..	89
88	..	133	132	..	150-153	147-149	130	88
87	..	..	..	..	..	146	..	87
86	134	132	..	144-146	..	145	129	86
85	..	131	..	..	..	144	..	85
84	..	130	131	..	149	..	..	84
83	..	129	..	143	..	..	128	83
82	133	128	..	..	..	..	..	82
81	..	127	130	..	..	143	..	81
80	..	126	128-129	141-142	..	..	127	80
79	132	..	127	140	148	..	..	79
78	..	..	..	138-139	..	142	..	78
77	131	..	..	..	147	..	..	77
76	..	125	..	..	..	141	..	76
75	..	..	..	..	..	..	..	75
74	..	..	..	..	..	..	126	74
73	..	..	126	..	146	140	..	73
72	..	..	..	137	..	139	..	72
71	..	124	..	..	..	..	..	71
70	130	..	..	..	145	138	..	70
69	..	..	..	..	144	136-137	125	69
68	..	123	125	..	..	..	..	68
67	..	..	..	134-136	143	135	124	67
66	..	..	124	..	..	..	..	66
65	..	122	..	..	..	..	123	65
64	129	121	123	..	..	134	..	64
63	..	120	..	..	142	..	122	63
62	128	..	122	133	..	..	..	62
61	..	..	..	..	..	133	121	61
60	127	..	..	..	141	..	..	60
59	..	..	121	..	139-140	132	120	59
58	126	..	..	..	138	..	..	58
57	..	119	120	131-132	..	..	119	57
56	125	..	119	..	137	131	..	56
55	124	..	118	..	..	..		55
54	123	..	..	..	136	..	118	54
53	..	..	117	..	..	130	..	53
52	..	..	..	130	135	..	..	52
51	122	118	116	..	..	129	..	51
50	..	..	..	..	..	..	..	50

GENERAL APTITUDE TEST BATTERY

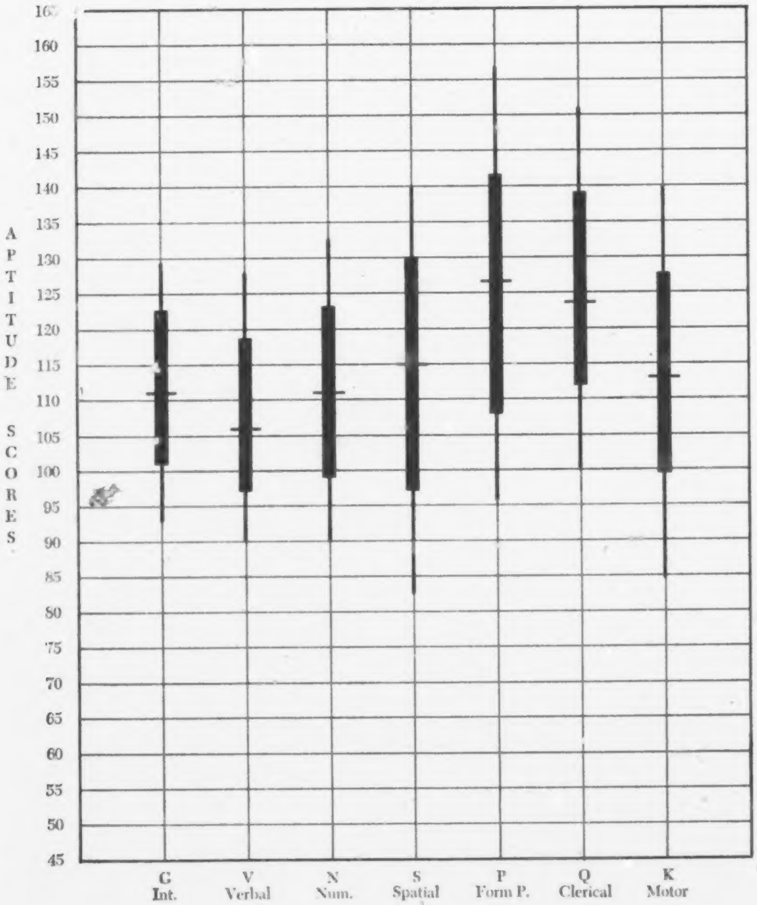
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

MEDICAL LABORATORY ASSISTANT

(Continued)

Per-centile	G	V	N	S	P	Q	K	Per-centile
49	..	117		..	134	..		49
48	..	..	..	..	..	128	117	48
47	..	116	..	128-129	..	127	..	47
46	121	115	115	..	133	126	..	46
45	..	112-114	..	127	..	125	116	45
44	..	..	..	..	..	..	115	44
43	..	..	..	125-126	132	124	114	43
42	120	..	..	..	..	..	..	42
41	..	111	114	..	131	..	..	41
40	119	..	..	..	130	..	113	40
39	118	..	..	..	..	..	..	39
38	..	..	..	..	129	123	..	38
37	117	110	..	..	128	..	110-112	37
36	..	..	113	..	127	..	..	36
35	..	..	..	124	..	..	..	35
34	..	109	..	..	126	..	..	34
33	116	..	..	..	..	122	..	33
32	..	..	..	..	125	..	109	32
31	..	..	112	..	124	120-121	..	31
30	115	..	..	..	..	..	..	30
29	..	..	111	..	123	119	..	29
28	..	108	..	..	..	..	..	28
27	114	..	110	121-123	..	..	108	27
26	..	..	..	..	122	..	107	26
25	..	..	..	..	..	..	..	25
24	..	107	..	120	120-121	..	106	24
23	..	..	..	..	..	..	105	23
22	113	..	109	118-119	119	118	104	22
21	..	..	..	117	..	..	..	21
20	..	106	..	115-116	..	..	103	20
19	112	..	..	114	118	..	..	19
18	..	..	108	111-113	115-117	116-117	100-102	18
17	111	..	..	..	114	..	99	17
16	109-110	105	107	110	113	115	96-98	16
15	108	104	..	..	..	..	95	15
14	..	103	106	108-109	112	114	94	14
13	107	..	..	..	..	113	..	13
12	..	102	105	..	105-111	109-112	93	12
11	..	..	..	..	104	..	..	11
10	106	101	104	107	..	108	92	10
9	..	100	103	..	103	..	..	9
8	100-105	99	92-102	..	97-102	..	91	8
7	99	..	91	..	96	107	..	7
6	95-98	..	88-90	102-106	..	100-106	90	6
5	94	98	87	101	95	99	89	5
4	87-93	..	86	92-100	87-94	92-98	85-88	4
3	86	..	85	91	86	91	84	3
2	85	89-97	..	89-90	63-85	83-90	63-83	2
1	84	88	84	88	62	82	62	1
	N=49 M=121.29 SD=13.54	N=49 M=116.33 SD=12.19	N=49 M=117.24 SD=13.64	N=49 M=127.71 SD=15.14	N=49 M=131.73 SD=20.72	N=49 M=128.92 SD=17.46	N=49 M=114.39 SD=15.71	

Practical Nursing



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

PRACTICAL NURSING

Percentile	G	V	N	S	P	Q	K	Percentile
99	137-157	137-141	138-157	148-156	164-173	161-176	149-179	99
98	134-136	134-136	136-137	147	163	156-160	146-148	98
97	133	132-133	135	143-146	161-162	154-155	143-145	97
96	131-132	129-131	134	141-142	158-160	152-153	141-142	96
95	129-130	127-128	132-133	140	156-157	151	140	95
94	128	126	..	138-139	154-155	150	138-139	94
93	..	125	131	..	152-153	147-149	135-137	93
92	127	124	130	137	151	145-146	134	92
91	..	..	129	134-136	148-150	144	133	91
90	126	123	128	..	146-147	..	..	90
89	..	122	127	133	145	143	132	89
88	125	121	126	..	144	142	131	88
87	..	120	..	131-132	..	..	130	87
86	124	..	125	..	143	141	..	86
85	..	..	..	..	..	140	129	85
84	123	119	124	130	142	..	128	84
83	..	..	123	..	..	139	..	83
82	122	118	122	..	141	..	127	82
81	..	..	..	128-129	..	138	..	81
80	121	..	121	..	140	..	126	80
79	..	117	..	127	..	137	125	79
78	120	..	120	..	139	136	..	78
77	..	..	..	..	..	..	124	77
76	119	116	119	125-126	..	135	123	76
75	..	..	..	..	138	..	..	75
74	..	115	118	..	..	..	122	74
73	118	..	..	..	137	134	..	73
72	..	112-114	117	..	136	..	121	72
71	..	..	..	124	..	..	..	71
70	117	111	..	..	135	..	..	70
69	..	..	116	..	..	133	..	69
68	..	..	..	..	134	..	120	68
67	116	110	..	..	..	132	..	67
66	..	..	115	..	133	131	..	66
65	115	..	..	121-123	..	130	119	65
64	..	109	..	..	..	129	118	64
63	..	..	..	..	132	..	..	63
62	..	..	114	120	..	..	..	62
61	114	..	..	..	131	128	..	61
60	..	..	..	..	..	127	117	60
59	..	..	..	..	130	126	..	59
58	..	108	113	118-119	..	..	116	58
57	..	..	..	..	129	..	..	57
56	113	..	..	..	..	125	..	56
55	..	..	112	..	..	..	115	55
54	..	107	..	117	128	..	..	54
53	..	..	..	..	..	..	..	53
52	112	..	..	..	..	124	114	52
51	..	..	111	115-116	127	..	..	51
50	..	106	..	..	..	..	113	50

GENERAL APTITUDE TEST BATTERY

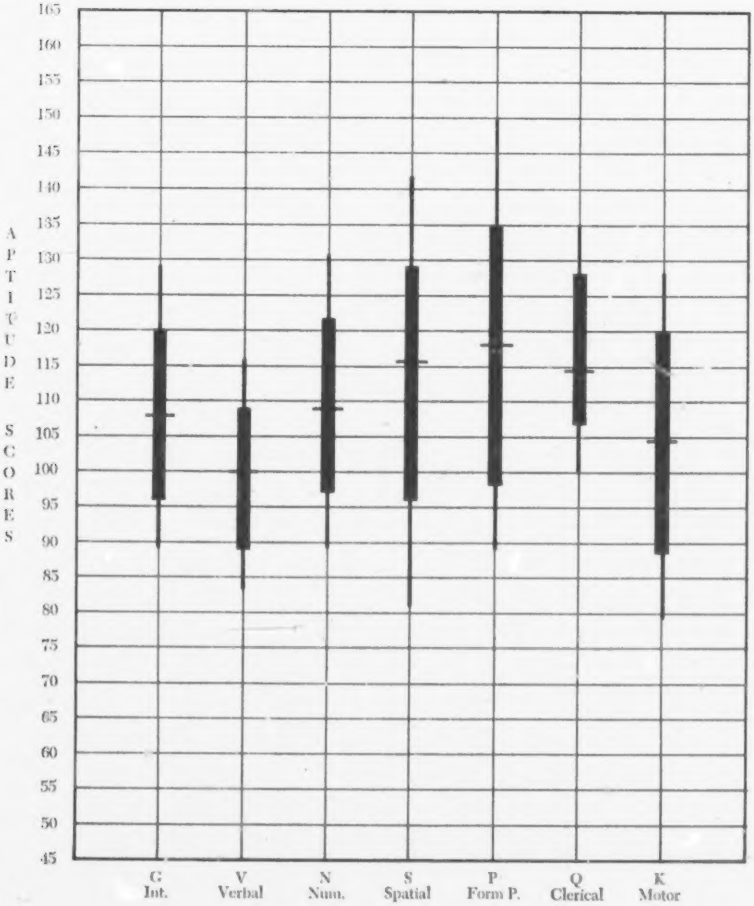
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

PRACTICAL NURSING

(Continued)

Per-centile	G	V	N	S	P	Q	K	Per-centile
49	111	..	..	..	126	..	..	49
48	..	..	..	114	..	123	..	48
47	..	..	110	..	..	..	112	47
46	..	..	..	111-113	125	..	..	46
45	110	105	..	..	..	..	..	45
44	..	..	109	..	124	..	111	44
43	..	..	..	110	..	122	..	43
42	109	..	..	..	..	..	..	42
41	..	104	108	..	123	121	110	41
40	..	..	..	108-109	..	..	..	40
39	108	..	..	..	122	120	109	39
38	..	..	..	..	..	..	..	38
37	..	103	107	..	121	..	108	37
36	..	..	..	107	120	..	..	36
35	..	..	..	..	119	119	..	35
34	107	..	..	..	..	..	107	34
33	..	..	106	..	118	..	..	33
32	..	102	..	105-106	..	..	106	32
31	106	..	105	..	117	..	..	31
30	..	..	..	..	..	118	105	30
29	..	..	..	104	116	..	..	29
28	105	101	104	..	..	116-117	104	28
27	..	..	..	..	115	..	103	27
26	..	..	..	102-103	..	115	102	26
25	104	100	103	..	114	..	..	25
24	..	..	..	..	..	..	..	24
23	103	..	..	..	113	114	..	23
22	..	99	102	101	..	..	101	22
21	..	..	..	..	112	..	..	21
20	102	98	..	..	..	113	..	20
19	..	..	101	98-100	111	..	..	19
18	..	..	..	..	110	..	100	18
17	101	97	100	97	109	112	..	17
16	..	..	99	..	108	..	99	16
15	100	..	..	95-96	107	111	98	15
14	..	..	98	..	106	110	97	14
13	99	96	..	94	..	..	96	13
12	98	..	97	92-93	105	109	..	12
11	97	..	96	..	104	108	95	11
10	..	95	..	91	..	..	94	10
9	96	94	95	..	103	107	92-93	9
8	..	..	..	89-90	101-102	..	90-91	8
7	95	92-93	94	88	100	105-106	88-89	7
6	94	91	91-93	84-87	97-99	101-104	87	6
5	93	90	90	82-83	95-96	100	83-86	5
4	92	89	88-89	81	93-94	99	82	4
3	91	88	87	75-80	91-92	97-98	76-81	3
2	88-90	84-87	85-86	74	89-90	94-96	64-75	2
1	82-87	76-83	68-84	68-73	60-88	82-93	39-63	1
	N=509 M=111.33 SD=11.47	N=509 M=107.36 SD=11.33	N=509 M=111.00 SD=12.47	N=509 M=113.43 SD=16.88	N=509 M=125.77 SD=17.58	N=509 M=125.06 SD=14.95	N=509 M=112.51 SD=17.55	

Sales



APTITUDE SCORES
165
160
155
150
145
140
135
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
G Int.
V Verbal
N Num.
S Spatial
P Form P.
Q Clerical
K Motor

GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

SALES

Percentile	G	V	N	S	P	Q	K	Percentile
99	142-144	122-137	135-153	151-156	163	142-144	136-138	99
98	141	121	134	150	155-162	141	132-135	98
97	140	119-120	132-133	144-149	153-154	136-140	131	97
96	129-139	117-118	131	143	152	..	130	96
95	..	116	..	141-142	149-151	135	127-129	95
94	128	115	130	140	148	134	126	94
93	127	..	128-129	138-139	146-147	..	125	93
92	125-126	112-114	127	..	145	132-133	..	92
91	..	...	126	137	..	..	124	91
90	124	111	125	134-136	144	..	..	90
89	..	110	..	..	139-143	131	123	89
88	..	..	124	133	138	..	122	88
87	122-123	..	..	131-132	137	..	121	87
86	..	..	123	..	..	130	..	86
85	121	..	..	130	136	129	..	85
84	..	109	122	..	..	128	120	84
83	120	..	..	..	135	126-127	..	83
82	..	..	121	128-129	..	..	..	82
81	119	..	120	..	134	..	119	81
80	..	..	..	..	..	125	..	80
79	117-118	..	..	..	..	..	118	79
78	..	..	119	127	133	..	..	78
77	..	108	..	..	..	..	..	77
76	116	..	..	..	..	124	117	76
75	..	..	118	..	132	..	116	75
74	..	107	..	..	..	..	..	74
73	115	..	117	125-126	..	123	..	73
72	..	106	..	..	131	..	115	72
71	..	..	116	..	..	..	..	71
70	114	..	..	..	..	122	..	70
69	113	105	115	..	129-130	121	114	69
68	..	..	..	124	128	120	..	68
67	..	..	..	..	127	..	..	67
66	112	104	114	..	126	..	113	66
65	..	..	..	..	125	..	..	65
64	..	..	..	..	..	..	..	64
63	..	..	..	..	124	119	112	63
62	111	103	113	121-123	123	..	111	62
61	..	..	..	..	..	..	110	61
60	..	..	..	..	122	..	109	60
59	..	..	..	..	121	..	108	59
58	110	..	..	120	..	118	..	58
57	..	102	112	..	120	..		57
56	..	..	111	..	..	116-117	107	56
55	109	..	110	118-119	..	..	..	55
54	..	..	..	..	119	..	..	54
53	..	101	..	..	..	..	106	53
52	..	..	..	117	..	115	..	52
51	108	..	109	..	..	..	105	51
50	..	100	..	115-116	118	..	..	50

GENERAL APTITUDE TEST BATTERY

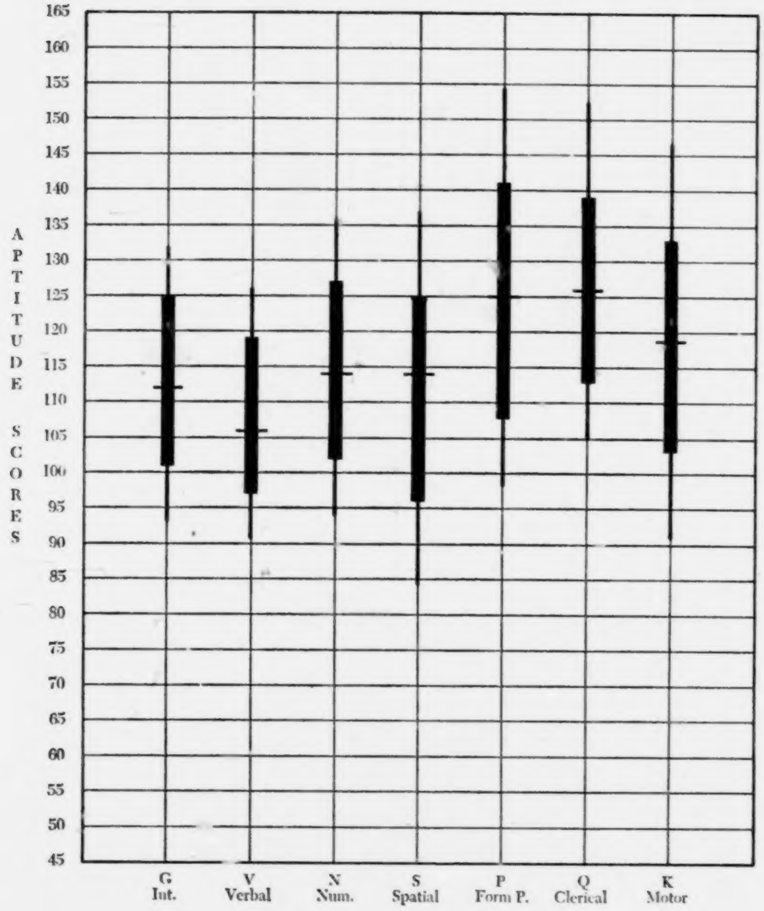
Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

SALES

(Continued)

Percentile	G	V	N	S	P	Q	K	Percentile
49	..	..	..	..	..	..	104	49
48	107	..	108	..	..	114	103	48
47	..	99	..	..	117	..	102	47
46	..	..	..	114	..	..	..	46
45	..	..	107	..	..	..	..	45
44	106	..	..	..	116	..	101	44
43	..	..	..	111-113	..	113	..	43
42	..	..	106	..	..	..	..	42
41	105	98	..	110	115	..	..	41
40	..	..	..	..	..	..	100	40
39	104	..	105	108-109	114	..	..	39
38	..	..	..	..	..	..	..	38
37	..	..	..	107	113	112	99	37
36	103	..	..	..	112	..	..	36
35	..	97	104	105-106	111	..	..	35
34	..	96	..	..	..	..	98	34
33	..	95	..	..	110	111	97	33
32	102	..	103	..	..	110	..	32
31	..	..	..	104	109	..	96	31
30	101	94	102	..	..	..	..	30
29	..	..	..	..	108	109	95	29
28	100	..	..	..	107	..	..	28
27	..	..	101	102-103	106	..	..	27
26	..	93	..	..	..	..	94	26
25	99	..	100	101	105	..	93	25
24	..	..	..	..	104	108	92	24
23	..	92	99	98-100	..	..	..	23
22	..	..	..	..	103	..	91	22
21	98	..	98	..	102	..	..	21
20	..	91	..	..	..	..	90	20
19	97	90	..	97	101	..	..	19
18	..	..	97	..	..	107	89	18
17	..	89	..	..	99-100	..	..	17
16	..	..	..	95-96	97-98	..	88	16
15	96	..	96	..	96	106	..	15
14	..	88	95	..	..	..	87	14
13	..	..	..	94	95	105	..	13
12	95	..	94	..	..	..	..	12
11	..	87	..	92-93	94	..	..	11
10	..	..	93	91	..	104	86	10
9	94	86	..	89-90	..	..	..	9
8	..	..	92	88	93	102-103	83-85	8
7	93	..	..	85-87	92	101	82	7
6	91-92	84-85	90-91	84	90-91	100	81	6
5	88-90	83	89	79-83	89	..	79-80	5
4	85-87	82	86-88	78	88	..	78	4
3	84	81	85	75-77	85-87	99	75-77	3
2	83	..	81-84	74	82-84	91-98	69-74	2
1	79-82	80	78-80	71-73	77-81	78-90	60-68	1
	N=108 M=108.22 SD=12.53	N=108 M=99.89 SD=10.12	N=108 M=109.04 SD=12.89	N=108 M=113.67 SD=17.78	N=108 M=118.29 SD=18.38	N=108 M=116.03 SD=11.14	N=108 M=104.28 SD=15.39	

Secretarial Training



GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

SECRETARIAL TRAINING

Percentile	G	V	N	S	P	Q	K	Percentile
99	137-144	134-143	142-151	143-156	163-169	164-174	154-179	99
98	135-136	132-133	139-141	141-142	160-162	162-163	151-153	98
97	134	129-131	138	140	158-159	156-161	149-150	97
96	133	127-128	137	138-139	156-157	154-155	148	96
95	132	126	136	137	154-155	152-153	146-147	95
94	131	125	135	134-136	152-153	151	144-145	94
93	130	124	134	133	150-151	149-150	143	93
92	129	..	133	131-132	148-149	147-148	141-142	92
91	..	123	132	..	147	145-146	140	91
90	128	..	131	130	146	144	139	90
89	..	122	..	..	145	143	138	89
88	127	..	130	128-129	144	..	137	88
87	..	121	..	..	143	142	136	87
86	126	..	129	127	..	141	..	86
85	..	120	..	..	142	140	135	85
84	125	..	128	125-126	..	..	134	84
83	..	119	..	..	141	139	133	83
82	124	..	126-127	..	140	..	..	82
81	..	118	..	..	..	138	132	81
80	123	..	..	..	139	137	131	80
79	..	117	125	..	..	..	..	79
78	..	..	..	..	138	136	130	78
77	122	116	124	124	..	..	129	77
76	..	..	..	..	137	..	..	76
75	121	..	123	..	..	135	128	75
74	..	115	..	..	136	..	..	74
73	..	..	122	..	..	134	127	73
72	120	112-114	..	..	135	..	..	72
71	119	..	..	121-123	..	..	126	71
70	..	..	121	..	..	..	..	70
69	118	111	..	..	134	133	125	69
68	..	..	..	..	..	..	..	68
67	..	..	120	..	133	132	..	67
66	117	110	..	120	..	..	124	66
65	..	..	119	..	132	131	..	65
64	..	..	..	..	..	..	..	64
63	116	109	118	..	131	130	123	63
62	..	..	..	..	..	..	..	62
61	..	..	117	118-119	..	..	122	61
60	..	..	..	..	130	129	..	60
59	115	..	..	..	..	..	121	59
58	..	..	116	..	129	..	..	58
57	..	..	..	117	128	..	..	57
56	114	108	..	..	..	128	..	56
55	..	..	115	..	127	..	120	55
54	..	..	..	..	..	..	..	54
53	113	107	..	115-116	126	127	..	53
52	..	..	..	..	..	..	..	52
51	..	..	114	..	..	126	119	51
50	112	..	..	..	125	..	..	50

GENERAL APTITUDE TEST BATTERY

Project Mini-Score Training Norms for Minnesota Area Vocational-Technical Schools

SECRETARIAL TRAINING

(Continued)

Per-centile	G	V	N	S	P	Q	K	Per-centile
49	..	106	..	114	..	..	118	49
48	..	..	113	..	124	125	..	48
47	111	..	..	..	..	..	..	47
46	..	..	..	111-113	..	..	..	46
45	..	105	112	..	123	124	..	45
44	110	..	..	..	..	..	117	44
43	..	..	..	110	..	..	..	43
42	..	104	..	..	122	..	..	42
41	109	..	111	..	..	123	116	41
40	..	..	..	108-109	121	..	..	40
39	..	..	..	..	..	..	..	39
38	108	103	..	..	..	..	115	38
37	..	..	110	107	120	122	..	37
36	..	..	..	..	..	..	..	36
35	..	..	109	105-106	..	121	114	35
34	107	102	..	..	119	120	..	34
33	..	..	..	..	..	..	113	33
32	..	..	108	..	118	..		32
31	..	101	..	104	..	..	112	31
30	106	..	..	..	117	119	..	30
29	..	..	107	..	..	..	111	29
28	..	..	..	..	116	..	110	28
27	..	100	..	..	..	..	..	27
26	105	..	106	102-103	115	118	109	26
25	..	..	..	..	..	..	108	25
24	..	..	..	..	114	116-117	..	24
23	104	99	105	101	113	..	107	23
22	..	..	..	..	112	115	..	22
21	103	..	..	..	111	..	106	21
20	..	98	104	98-100	110	..	..	20
19	102	..	..	..	..	114	105	19
18	..	..	103	97	109	..	..	18
17	101	97	..	..	108	..	104	17
16	..	..	102	95-96	..	113	103	16
15	100	..	..	..	107	..	102	15
14	..	96	101	..	106	112	..	14
13	99	..	100	94	..	..	101	13
12	..	95	99	..	105	110-111	..	12
11	98	..	..	92-93	104	..	99-100	11
10	..	94	98	..	103	109	98	10
9	97	..	97	91	..	108	97	9
8	96	93	96	..	101-102	..	96	8
7	95	92	..	88-90	100	107	95	7
6	94	91	95	85-87	99	105-106	93-94	6
5	93	..	94	84	98	..	90-92	5
4	92	90	92-93	82-83	95-97	101-104	88-89	4
3	90-91	88-89	90-91	81	93-94	100	84-87	3
2	89	86-87	85-89	78-80	90-92	97-99	74-83	2
1	77-88	76-85	68-84	65-77	80-89	75-96	29-73	1
	N=739 M=112.37 SD=11.78	N=739 M=107.23 SD=11.09	N=739 M=114.15 SD=13.02	N=739 M=112.13 SD=15.38	N=739 M=125.23 SD=16.67	N=739 M=126.49 SD=14.48	N=739 M=117.94 SD=17.94	

EXPECTANCY TABLES FOR FRESHMEN ENTERING MINNESOTA COLLEGES

The expectancy tables on the following pages are similar to tables published in earlier editions. For each group there are two tables for predicting first year college marks, one based on high school percentile ranks (HSR) and one based on the Minnesota Scholastic Aptitude Test (MSAT).

The user is referred to Dr. Perry's chapter on test interpretation for a further discussion of the use of these tables.

UNIVERSITY OF MINNESOTA

COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

FEMALES

Per-centile	Per-cent of class	HSR N = 193		Per-cent of class	MSAT N = 180	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	53	92	40	36	92	43
60-79	30	79	17	24	75	18
40-59	17	47	6	20	80	29
20-39		*	—	14	60	8
1-19		—	—	6	64	—

MALES

Per-centile	Per-cent of class	HSR N = 265		Per-cent of class	MSAT N = 234	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	37	89	31	25	81	29
60-79	38	70	8	23	75	23
40-59	23	46	7	25	61	7
20-39	2	*	—	23	62	2
1-19		—	—	4	*	—

*The number of students in this cell is not large enough to produce a reliable percentage.
—No students in this cell.

UNIVERSITY OF MINNESOTA
COLLEGE OF LIBERAL ARTS

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Percentile	Percent of class	HSR N = 1971		Percent of class	MSAT N = 1990	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
90-99	35	92	47	34	90	44
80-89	24	80	18	19	79	24
60-79	29	67	10	25	71	14
40-59	10	56	7	17	65	8
20-39	2	47	9	5	54	3
1-19		*	—	1	55	9

Males

Percentile	Percent of class	HSR N = 1781		Percent of class	MSAT N = 1812	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
90-99	23	88	45	27	82	39
80-89	22	74	20	18	73	20
60-79	34	62	10	31	64	13
40-59	17	50	7	20	55	8
20-39	4	57	11	5	54	8
1-19		*	—		*	—

*The number of students in this cell is not large enough to produce a reliable percentage.

—No students in this cell.

UNIVERSITY OF MINNESOTA
EDUCATION

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Males and Females Combined

Percentile	Percent of class	HSR N = 70		Percent of class	MSAT N = 71	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	54	68	13	25	83	22
60-79	33	61	4	31	55	—
40-59	10	*	—	24	47	6
20-39	3	—	—	17	50	8
1-19		—	—	3	*	—

*The number of students in this cell is not large enough to produce a reliable percentage.
—No students in this cell.

UNIVERSITY OF MINNESOTA
INSTITUTE OF TECHNOLOGY

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Per-centile	Per-cent of class	HSR N = 23		Per-cent of class	MSAT N = 23	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
90-99	65	93	53	48	100	73
80-89	26	*	—	35	*	—
60-79	9	*	—	13	*	—
40-59		—	—	4	—	—
20-39		—	—		—	—
1-19		—	—		—	—

Males

Per-centile	Per-cent of class	HSR N = 601		Per-cent of class	MSAT N = 600	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
90-99	49	89	41	33	89	42
80-89	27	71	17	22	83	31
60-79	19	66	9	23	71	18
40-59	4	60	12	15	70	8
20-39		*	—	5	59	18
1-19		—	—	1	*	—

*The number of students in this cell is not large enough to produce a reliable percentage.
—No students in this cell.

UNIVERSITY OF MINNESOTA
GENERAL COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Percentile	Percent of class	HSR N = 313 Chances in 100 of a freshman obtaining an average grade of: C or Higher	HSR N = 313 Chances in 100 of a freshman obtaining an average grade of: B or Higher	Percent of class	MSAT N = 318 Chances in 100 of a freshman obtaining an average grade of: C or Higher	MSAT N = 318 Chances in 100 of a freshman obtaining an average grade of: B or Higher
80-99	2	*	*	1	*	—
60-79	16	86	35	6	100	21
40-59	30	80	16	21	87	22
20-39	32	69	11	30	83	19
1-19	21	63	6	42	57	9

Males

Percentile	Percent of class	HSR N = 490 Chances in 100 of a freshman obtaining an average grade of: C or Higher	HSR N = 490 Chances in 100 of a freshman obtaining an average grade of: B or Higher	Percent of class	MSAT N = 492 Chances in 100 of a freshman obtaining an average grade of: C or Higher	MSAT N = 492 Chances in 100 of a freshman obtaining an average grade of: B or Higher
80-99	1	*	*	1		
60-79	8	90	18	5	Validity coefficient less than .20	
40-59	24	78	23	22		
20-39	40	72	16	36		
1-19	27	48	11	36		

***The number of students in this cell is not large enough to produce a reliable percentage.**
—No students in this cell.

UNIVERSITY OF MINNESOTA
DENTAL HYGIENE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Percentile	Percent of class	HSR N = 32 Chances in 100 of a freshman obtaining an average grade of:		Percent of class	MSAT N = 32 Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	75	67	17	63	75	20
60-79	19	*	—	34	46	—
40-59	6	*	—	3	—	—
20-39		—	—		—	—
1-19		—	—		—	—

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—No students in this cell.

UNIVERSITY OF MINNESOTA
DULUTH

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Percentile	Percent of class	HSR N = 607		Percent of class	MSAT N = 593	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	51	83	24	27	87	37
60-79	30	50	2	26	66	5
40-59	11	30	—	23	50	5
20-39	7	18	—	14	47	1
1-19	1	—	—	9	16	—

Males

Percentile	Percent of class	HSR N = 718		Percent of class	MSAT N = 698	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	25	81	28	17	77	30
60-79	29	56	10	26	54	9
40-59	25	30	—	23	43	7
20-39	15	30	1	21	38	2
1-19	6	13	—	13	24	2

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—No students in this cell.

UNIVERSITY OF MINNESOTA
MORRIS

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Percentile	Percent of class	HSR N = 170		Percent of class	MSAT N = 169	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
90-99	42	100	60	23	97	59
80-89	26	82	13	15	88	40
60-79	24	66	7	31	85	27
40-59	6	50	20	22	76	14
20-39	1	—	—	8	50	—
1-19	1	—	—	2	*	*

Males

Percentile	Percent of class	HSR N = 235		Percent of class	MSAT N = 231	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
90-99	24	93	51	16	86	50
80-89	25	73	27	20	80	37
60-79	37	56	5	34	65	13
40-59	13	55	—	19	60	2
20-39	1	*	—	10	56	13
1-19		—	—	2	*	—

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—No students in this cell.

UNIVERSITY OF MINNESOTA
CROOKSTON

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Males and Females Combined

Percentile	Percent of class	HSR N = 176		Percent of class	MSAT N = 149	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	9	87	40	9	77	38
60-79	17	87	40	14	86	38
40-59	28	80	16	16	71	29
20-39	28	61	14	22	82	15
1-19	18	47	6	39	66	12

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—No students in this cell.

AUGSBURG COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Percentile	Percent of class	HSR N = 211 Chances in 100 of a freshman obtaining an average grade of:		Percent of class	MSAT N = 211 Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
90-99	52	96	58	46	98	57
80-89	25	96	17	23	94	27
60-79	17	75	3	19	78	7
40-59	5	82	—	10	86	5
20-39	1	*	—	1	*	*
1-19		—	—		—	—

Males

Percentile	Percent of class	HSR N = 184 Chances in 100 of a freshman obtaining an average grade of:		Percent of class	MSAT N = 184 Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
90-99	26	98	54	23	95	57
80-89	18	79	32	16	76	31
60-79	32	73	7	34	81	6
40-59	18	55	3	20	57	14
20-39	4	*	—	5	40	—
1-19	1	*	—	2	*	—

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—No students in this cell.

BETHEL COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Per-centile	Per-cent of class	HSR N=138		Per-cent of class	MSAT N=139	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
90-99	30	93	57	22	100	60
80-89	27	89	22	14	95	57
60-79	33	76	11	31	86	12
40-59	9	58	—	19	65	19
20-39	1	—	—	10	71	14
1-19		—	—	5	*	—

Males

Per-centile	Per-cent of class	HSR N=101		Per-cent of class	MSAT N=101	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
90-99	27	89	41	18	100	50
80-89	22	100	18	12	75	17
60-79	24	62	12	26	73	12
40-59	16	31	—	26	54	8
20-39	11	36	—	16	56	12
1-19	1	*	—	3	*	—

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—No students in this cell.

CARLETON COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

		HSR N = 23			MSAT N = 24	
Percentile	Percent of class	Chances in 100 of a freshman obtaining an average grade of:		Percent of class	Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
90-99	96	100	32	95	100	35
80-89	4	*	—	5	*	—
60-79		—	—		—	—
40-59		—	—		—	—
20-39		—	—		—	—
1-19		—	—		—	—

Males

		HSR N = 72			MSAT N = 72	
Percentile	Percent of class	Chances in 100 of a freshman obtaining an average grade of:		Percent of class	Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
90-99	78	91	46	81	91	48
80-89	6	*	*	10	*	*
60-79	17	83	25	6	*	—
40-59		—	—	4	*	—
20-39		—	—		—	—
1-19		—	—		—	—

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CONCORDIA COLLEGE — MOORHEAD

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

		HSR N = 226			MSAT N = 221	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
Percentile	Percent of class	C or Higher	B or Higher	Percent of class	C or Higher	B or Higher
90-99	40	99	69	25	98	59
80-89	23	88	28	16	86	49
60-79	27	79	8	28	90	37
40-59	8	47	5	19	81	19
20-39	2	—	—	9	58	10
1-19		—	—	3	*	—

Males

		HSR N = 196			MSAT N = 194	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
Percentile	Percent of class	C or Higher	B or Higher	Percent of class	C or Higher	B or Higher
90-99	19	95	63	18	94	56
80-89	24	89	32	18	89	37
60-79	30	75	19	18	68	24
40-59	19	54	3	25	77	10
20-39	8	47	—	14	59	15
1-19		—	—	8	50	6

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—No students in this cell.

CONCORDIA COLLEGE — ST. PAUL

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Percentile	Percent of class	HSR N = 120 Chances in 100 of a freshman obtaining an average grade of: C or Higher	HSR N = 120 Chances in 100 of a freshman obtaining an average grade of: B or Higher	Percent of class	MSAT N = 120 Chances in 100 of a freshman obtaining an average grade of: C or Higher	MSAT N = 120 Chances in 100 of a freshman obtaining an average grade of: B or Higher
80-99	46	96	47	27	97	52
60-79	25	77	10	21	96	36
40-59	22	59	4	25	73	13
20-39	5	*	—	21	60	4
1-19	2	*	*	6	*	—

Males

Percentile	Percent of class	HSR N = 95 Chances in 100 of a freshman obtaining an average grade of: C or Higher	HSR N = 95 Chances in 100 of a freshman obtaining an average grade of: B or Higher	Percent of class	MSAT N = 97 Chances in 100 of a freshman obtaining an average grade of: C or Higher	MSAT N = 97 Chances in 100 of a freshman obtaining an average grade of: B or Higher
80-99	26	96	56	25	96	46
60-79	31	86	7	22	71	24
40-59	22	48	5	15	93	7
20-39	12	46	—	21	60	—
1-19	9	*	—	18	18	—

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—No students in this cell.

DR. MARTIN LUTHER COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Males and Females Combined

Percentile	Percent of class	HSR N =54		Percent of class	MSAT N =58	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	39	100	76	38	100	50
60-79	20	91	9	31	89	33
40-59	17	*	—	17	90	10
20-39	20	55	—	10	*	—
1-19	4	*	—	3	*	—

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GUSTAVUS ADOLPHUS COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

		HSR N = 235			MSAT N = 249	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
Percentile	Percent of class	C or Higher	B or Higher	Percent of class	C or Higher	B or Higher
90-99	43	98	51	38	95	53
80-89	25	86	22	20	82	28
60-79	28	74	6	26	88	17
40-59	3	*	*	9	83	9
20-39		—	—	6	80	—
1-19		—	—	1	*	—

Males

		HSR N = 196			MSAT N = 223	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
Percentile	Percent of class	C or Higher	B or Higher	Percent of class	C or Higher	B or Higher
90-99	29	96	52	32	89	47
80-89	27	91	23	16	91	23
60-79	31	79	13	23	83	10
40-59	12	65	—	17	80	15
20-39	1	*	—	9	71	10
1-19	1	—	—	2	*	—

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—No students in this cell.

HAMLINE UNIVERSITY

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Males

Percentile	Percent of class	HSR N = 110		Percent of class	MSAT N = 110	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
90-99	36	95	57	26	93	41
80-89	25	89	7	16	94	33
60-79	27	60	7	28	74	19
40-59	12	69	—	21	70	9
20-39		—	—	7	*	*
1-19		—	—	1	*	—

Females

Percentile	Percent of class	HSR N = 111		Percent of class	MSAT N = 111	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
90-99	40	98	57	34	100	58
80-89	23	88	35	15	88	35
60-79	31	82	18	29	88	31
40-59	6	*	—	14	73	7
20-39		—	—	6	*	*
1-19		—	—	2	*	—

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—No students in this cell.

MACALESTER COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

		HSR N = 142			MSAT N = 152	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
Percentile	Percent of class	C or Higher	B or Higher	Percent of class	C or Higher	B or Higher
90-99	70	95	46	71	93	43
80-89	20	90	17	20	87	26
60-79	9	77	15	9	100	14
40-59		—	*		—	—
20-39		—	—		—	—
1-19		—	—		—	—

Males

		HSR N = 127			MSAT N = 139	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
Percentile	Percent of class	C or Higher	B or Higher	Percent of class	C or Higher	B or Higher
90-99	50	94	60	50	88	52
80-89	28	78	31	27	76	27
60-79	18	52	4	16	68	27
40-59	4	*	—	6	*	*
20-39		—	—	1	*	—
1-19		—	—		—	—

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—No students in this cell.

COLLEGE OF ST. BENEDICT

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Per-centile	Per-cent of class	HSR N=274 Chances in 100 of a freshman obtaining an average grade of: C or Higher	HSR N=274 Chances in 100 of a freshman obtaining an average grade of: B or Higher	Per-cent of class	MSAT N=268 Chances in 100 of a freshman obtaining an average grade of: C or Higher	MSAT N=268 Chances in 100 of a freshman obtaining an average grade of: B or Higher
90-99	30	99	65	25	100	65
80-89	26	100	36	19	94	44
60-79	24	95	23	28	96	27
40-59	14	87	3	18	98	10
20-39	4	83	8	9	83	12
1-19	3	*	—	1	*	—

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—No students in this cell.

COLLEGE OF ST. CATHERINE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Per-centile	Per-cent of class	HSR N=217 Chances in 100 of a freshman obtaining an average grade of: C or Higher	HSR N=217 Chances in 100 of a freshman obtaining an average grade of: B or Higher	Per-cent of class	MSAT N=218 Chances in 100 of a freshman obtaining an average grade of: C or Higher	MSAT N=218 Chances in 100 of a freshman obtaining an average grade of: B or Higher
90-99	47	98	54	48	95	45
80-89	20	86	14	19	76	22
60-79	24	69	10	18	82	22
40-59	5	64	—	11	71	4
20-39	3	*	—	3	*	—
1-19	1	—	—	1	*	—

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—No students in this cell.

ST. JOHN'S UNIVERSITY

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Males

Percentile	Percent of class	HSR N = 286		Percent of class	MSAT N = 245	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
90-99	30	95	52	28	85	35
80-89	23	91	14	21	88	20
60-79	27	73	6	29	81	15
40-59	16	47	2	16	65	12
20-39	3	70	—	5	75	8
1-19	1	*	—		*	—

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—No students in this cell.

ST. MARY'S COLLEGE — WINONA

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Males

Percentile	Percent of class	HSR N = 143		Percent of class	MSAT N = 127	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
90-99	17	100	60	18	87	52
80-89	13	94	39	15	95	26
60-79	31	96	24	20	88	27
40-59	23	67	12	19	83	17
20-39	11	56	—	13	76	24
1-19	4	*	—	14	78	6

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ST. OLAF COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Percentile	Percent of class	HSR N = 151 Chances in 100 of a freshman obtaining an average grade of:		Percent of class	MSAT N = 151 Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
90-99	68	99	54	64	99	51
80-89	25	92	19	21	97	36
60-79	7	70	30	13	79	21
40-59	1	—	—	2	*	*
20-39		—	—	1	*	*
1-19		—	—		—	—

Males

Percentile	Percent of class	HSR N = 191 Chances in 100 of a freshman obtaining an average grade of:		Percent of class	MSAT N = 191 Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
90-99	47	97	54	41	89	42
80-89	25	90	25	25	92	31
60-79	21	58	10	22	74	29
40-59	4	*	*	10	65	30
20-39	3	*	*	1	*	—
1-19		—	—	1	*	—

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—No students in this cell.

ST. PAUL BIBLE COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Males and Females Combined

Percentile	Percent of class	HSR N = 84		Percent of class	MSAT N = 85	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	26	86	18	11	*	*
60-79	26	59	—	21	72	11
40-59	23	42	—	21	50	—
20-39	20	29	—	26	54	—
1-19	5	*	—	21	28	—

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—No students in this cell.

COLLEGE OF ST. SCHOLASTICA

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Percentile	Percent of class	HSR N = 167		Percent of class	MSAT N = 181	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
90-99	31	100	75	14	92	68
80-89	25	98	48	21	97	45
60-79	29	78	14	20	92	50
40-59	5	*	*	28	84	26
20-39	7	58	—	11	79	16
1-19	2	*	—	7	83	17

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—No students in this cell.

COLLEGE OF ST. THOMAS

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Males

Percentile	Percent of class	HSR N = 322		Percent of class	MSAT N = 318	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
90-99	15	98	62	21	82	50
80-89	14	91	33	18	80	27
60-79	31	66	21	28	65	19
40-59	23	49	4	24	53	3
20-39	12	44	3	8	42	—
1-19	5	38	—	2	•	—

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—No students in this cell.

BEMIDJI STATE COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

		HSR N = 433			MSAT N = 372	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
Per-centile	Per-cent of class	C or Higher	B or Higher	Per-cent of class	C or Higher	B or Higher
80-99	42	91	34	19	90	32
60-79	27	69	14	24	77	23
40-59	22	44	2	23	71	16
20-39	8	36	6	18	55	9
1-19	2	*	—	16	34	3

Males

		HSR N = 463			MSAT N = 393	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
Per-centile	Per-cent of class	C or Higher	B or Higher	Per-cent of class	C or Higher	B or Higher
80-99	16	90	38	10	90	46
60-79	26	75	15	20	65	14
40-59	30	54	2	24	60	9
20-39	21	36	1	29	58	4
1-19	8	14	3	17	32	2

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—No students in this cell.

MANKATO STATE COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Percentile	Percent of class	HSR N = 1099		Percent of class	MSAT N = 1084	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	31	90	44	18	87	45
60-79	28	72	15	22	76	26
40-59	23	46	4	25	68	18
20-39	13	30	2	22	48	4
1-19	4	30	4	14	34	4

Males

Percentile	Percent of class	HSR N = 942		Percent of class	MSAT N = 934	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	14	89	46	12	72	37
60-79	23	72	20	18	72	24
40-59	28	48	6	25	60	11
20-39	23	41	5	24	48	8
1-19	12	22	1	20	34	3

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—No students in this cell.

MOORHEAD STATE COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

		HSR N = 448			MSAT N = 461	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
Percentile	Percent of class	C or Higher	B or Higher	Percent of class	C or Higher	B or Higher
80-99	40	91	41	22	89	51
60-79	34	73	11	26	85	25
40-59	20	54	6	24	65	16
20-39	5	38	—	20	71	9
1-19	2	*	—	9	50	2

Males

		HSR N = 417			MSAT N = 421	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
Percentile	Percent of class	C or Higher	B or Higher	Percent of class	C or Higher	B or Higher
80-99	22	90	48	15	92	49
60-79	27	71	18	23	72	29
40-59	32	56	6	25	68	15
20-39	16	34	3	25	46	5
1-19	3	50	17	11	46	4

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—No students in this cell.

ST. CLOUD STATE COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Percentile	Percent of class	HSR N = 1067		Percent of class	MSAT N = 1029	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	42	90	43	28	91	47
60-79	34	73	16	24	80	25
40-59	18	57	5	25	70	16
20-39	5	30	4	16	59	6
1-19	1	25	8	6	55	6

Males

Percentile	Percent of class	HSR N = 989		Percent of class	MSAT N = 940	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	22	87	41	15	82	35
60-79	29	71	12	23	65	14
40-59	28	48	3	27	58	12
20-39	17	34	3	21	50	7
1-19	4	15	5	13	41	4

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—No students in this cell.

WINONA STATE COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Percentile	Percent of class	HSR N = 416		Percent of class	MSAT N = 364	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	32	95	50	20	94	60
60-79	33	78	20	18	85	33
40-59	22	49	5	25	70	17
20-39	12	48	2	21	65	13
1-19	1	*	*	16	51	4

Males

Percentile	Percent of class	HSR N = 320		Percent of class	MSAT N = 275	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	12	87	38	9	92	23
60-79	27	[illegible]	12	16	88	16
40-59	32	[illegible]	4	25	61	12
20-39	23	[illegible]	[illegible]	28	53	5
1-19	7	[illegible]	[illegible]	22	50	—

*The nu[illegible] of students [illegible] not large enough to produce a reliable percentage.
—No stu[illegible] this cell.

ANOKA-RAMSEY STATE JUNIOR COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Percentile	Percent of class	HSR N = 236		Percent of class	MSAT N = 218	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	25	92	56	9	84	63
60-79	34	84	22	19	83	31
40-59	22	60	13	23	76	24
20-39	15	54	11	29	71	16
1-19	4	*	*	20	58	12

Males

Percentile	Percent of class	HSR N = 379		Percent of class	MSAT N = 363	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	9	76	33	8	79	25
60-79	24	62	11	16	63	18
40-59	28	60	9	21	55	10
20-39	25	63	10	26	58	12
1-19	14	46	13	29	53	5

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—No students in this cell.

AUSTIN STATE JUNIOR COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

		HSR N = 191			MSAT N = 167	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
Percentile	Percent of class	C or Higher	B or Higher	Percent of class	C or Higher	B or Higher
80-99	37	96	46	22	94	39
60-79	26	76	12	21	83	31
40-59	19	33	3	16	73	19
20-39	12	26	4	23	50	8
1-19	6	46	—	19	34	6

Males

		HSR N = 258			MSAT N = 233	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
Percentile	Percent of class	C or Higher	B or Higher	Percent of class	C or Higher	B or Higher
80-99	15	92	49	13	90	48
60-79	19	60	6	18	60	10
40-59	27	51	3	18	55	7
20-39	24	43	5	24	51	4
1-19	15	28	8	27	33	5

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—No students in this cell.

BRAINERD STATE JUNIOR COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

		HSR N = 79			MSAT N = 79	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
Percentile	Percent of class	C or Higher	B or Higher	Percent of class	C or Higher	B or Higher
80-99	33	85	62	18	100	71
60-79	37	83	17	16	77	46
40-59	15	42	—	16	77	31
20-39	13	30	—	20	63	6
1-19	3	—	—	29	43	4

Males

		HSR N = 112			MSAT N = 116	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
Percentile	Percent of class	C or Higher	B or Higher	Percent of class	C or Higher	B or Higher
80-99	14	75	31	16	72	28
60-79	24	63	22	14	62	12
40-59	28	39	—	17	50	10
20-39	23	19	—	26	23	3
1-19	11	—	—	28	19	—

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FERGUS FALLS STATE JUNIOR COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Percentile	Percent of class	HSR N=88		Percent of class	MSAT N=77	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	32	89	61	22	94	47
60-79	32	89	18	19	80	40
40-59	16	50	—	17	85	31
20-39	16	36	—	26	55	10
1-19	5	*	—	16	33	—

Males

Percentile	Percent of class	HSR N=135		Percent of class	MSAT N=139	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	8	91	36	12	88	44
60-79	14	74	21	17	67	8
40-59	30	49	—	19	41	4
20-39	29	31	5	21	45	7
1-19	19	20	4	31	28	2

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—No students in this cell.

HIBBING STATE JUNIOR COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Percentile	Percent of class	HSR N = 170		Percent of class	MSAT N = 167	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	35	100	54	28	94	53
60-79	30	74	12	26	86	16
40-59	23	67	3	16	73	8
20-39	11	67	6	19	72	12
1-19	2	*	—	11	53	10

Males

Percentile	Percent of class	HSR N = 165		Percent of class	MSAT N = 164	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	17	89	29	15	83	25
60-79	22	68	14	12	78	10
40-59	25	58	7	23	70	13
20-39	22	36	6	28	44	9
1-19	14	30	4	23	39	8

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—No students in this cell.

ITASCA STATE JUNIOR COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Per-centile	Per-cent of class	HSR N = 66		Per-cent of class	MSAT N = 65	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	29	90	68	20	100	69
60-79	36	100	21	17	82	36
40-59	21	64	7	25	81	19
20-39	11	*	—	20	92	8
1-19	3	*	—	18	33	8

Males

Per-centile	Per-cent of class	HSR N = 140		Per-cent of class	MSAT N = 127	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	10	93	43	12	93	20
60-79	26	64	17	17	59	18
40-59	23	53	3	18	48	9
20-39	25	34	—	22	46	4
1-19	16	13	—	31	28	3

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LAKEWOOD STATE JUNIOR COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Percentile	Percent of class	HSR N = 195 Chances in 100 of a freshman obtaining an average grade of:		Percent of class	MSAT N = 182 Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	25	84	39	10	79	42
60-79	32	77	18	20	89	22
40-59	24	66	13	28	78	16
20-39	14	61	14	20	58	11
1-19	5	*	—	21	51	10

Males

Percentile	Percent of class	HSR N = 363 Chances in 100 of a freshman obtaining an average grade of:		Percent of class	MSAT N = 325 Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	6	83	35	5	76	12
60-79	22	67	12	13	57	19
40-59	29	50	11	26	55	11
20-39	28	36	4	24	49	8
1-19	14	35	6	32	38	6

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MESABI STATE JUNIOR COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Percentile	HSR N = 146			MSAT N = 156		
	Percent of class	Chances in 100 of a freshman obtaining an average grade of:		Percent of class	Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	25	92	46	24	89	45
60-79	34	76	18	19	86	24
40-59	27	38	2	23	44	11
20-39	14	35	—	21	59	9
1-19		—	—	13	33	5

Males

Percentile	HSR N = 200			MSAT N = 218		
	Percent of class	Chances in 100 of a freshman obtaining an average grade of:		Percent of class	Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	15	87	43	22	65	22
60-79	26	56	4	16	51	9
40-59	25	32	—	26	34	4
20-39	22	23	2	19	32	—
1-19	12	8	—	17	8	—

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METROPOLITAN STATE JUNIOR COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Percentile	Percent of class	HSR N = 77		Percent of class	MSAT N = 72	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	16	92	42	6	*	*
60-79	19	80	47	22	75	38
40-59	35	70	18	22	75	38
20-39	21	75	38	28	75	15
1-19	9	*	—	22	75	12

Males

Percentile	Percent of class	HSR N = 141		Percent of class	MSAT N = 135	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	6	*	*	7		
60-79	14	65	35	15	Validity coefficient less than .20	
40-59	28	72	33	19		
20-39	33	53	17	23		
1-19	19	52	15	36		

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—No students in this cell.

NORMANDALE STATE JUNIOR COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Per-centile	Per-cent of class	HSR N = 256		Per-cent of class	MSAT N = 240	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	16	95	61	14	82	38
60-79	24	77	23	19	64	27
40-59	30	63	13	25	63	15
20-39	19	38	10	22	59	18
1-19	11	26	—	20	40	6

Males

Per-centile	Per-cent of class	HSR N = 468		Per-cent of class	MSAT N = 435	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	7	69	23	9	67	18
60-79	14	67	13	13	54	14
40-59	26	42	6	24	37	4
20-39	32	32	8	26	42	5
1-19	20	33	5	29	34	7

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—No students in this cell.

NORTH HENNEPIN STATE JUNIOR COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Per-centile	Per-cent of class	HSR N = 206 Chances in 100 of a freshman obtaining an average grade of: C or Higher	HSR N = 206 Chances in 100 of a freshman obtaining an average grade of: B or Higher	Per-cent of class	MSAT N = 190 Chances in 100 of a freshman obtaining an average grade of: C or Higher	MSAT N = 190 Chances in 100 of a freshman obtaining an average grade of: B or Higher
80-99	23	89	47	11	80	45
60-79	31	67	14	15	83	24
40-59	24	47	4	17	59	19
20-39	16	41	3	31	56	10
1-19	7	21	7	26	40	2

Males

Per-centile	Per-cent of class	HSR N = 349 Chances in 100 of a freshman obtaining an average grade of: C or Higher	HSR N = 349 Chances in 100 of a freshman obtaining an average grade of: B or Higher	Per-cent of class	MSAT N = 303 Chances in 100 of a freshman obtaining an average grade of: C or Higher	MSAT N = 303 Chances in 100 of a freshman obtaining an average grade of: B or Higher
80-99	7	52	26	7		
60-79	19	57	9	13	Validity coefficient less than .20	
40-59	32	33	4	19		
20-39	29	34	4	31		
1-19	13	19	—	30		

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—No students in this cell.

NORTHLAND STATE JUNIOR COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Males and Females Combined

Per-centile	Per-cent of class	HSR N = 135		Per-cent of class	MSAT N = 129	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	21	100	54	14	100	72
60-79	23	71	3	15	79	11
40-59	26	57	6	19	50	4
20-39	19	36	—	22	64	7
1-19	12	37	6	31	48	—

RAINY RIVER STATE JUNIOR COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Males and Females Combined

Per-centile	Per-cent of class	HSR N = 105		Per-cent of class	MSAT N = 90	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	30	94	61	9	*	*
60-79	27	86	21	19	88	35
40-59	18	84	16	26	78	26
20-39	18	42	5	26	65	22
1-19	8	*	—	21	58	—

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—No students in this cell.

ROCHESTER STATE JUNIOR COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

		HSR N = 408			MSAT N = 319	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
Percentile	Percent of class	C or Higher	B or Higher	Percent of class	C or Higher	B or Higher
80-99	30	77	34	20	74	31
60-79	30	60	11	23	71	24
40-59	21	48	6	24	58	11
20-39	15	49	20	16	53	6
1-19	4	33	—	17	42	7

Males

		HSR N = 398			MSAT N = 342	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
Percentile	Percent of class	C or Higher	B or Higher	Percent of class	C or Higher	B or Higher
80-99	8	91	39	14	78	31
60-79	24	72	24	11	69	18
40-59	24	56	12	22	57	13
20-39	27	49	7	26	53	7
1-19	17	36	6	26	48	9

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VERMILLION STATE JUNIOR COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Males and Females Combined

Percentile	Percent of class	HSR N = 118		Percent of class	MSAT N = 104	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	19	100	55	17	84	16
60-79	22	58	12	14	80	13
40-59	24	54	—	22	48	13
20-39	19	22	—	22	43	—
1-19	16	21	—	24	12	8

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—No students in this cell.

WILLMAR STATE JUNIOR COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Percentile	Percent of class	HSR N = 78 Chances in 100 of a freshman obtaining an average grade of:		Percent of class	MSAT N = 80 Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	24	100	53	14	100	73
60-79	26	90	30	16	92	46
40-59	27	86	14	26	95	29
20-39	22	76	18	28	91	14
1-19	1	—	—	16	70	15

Males

Percentile	Percent of class	HSR N = 168 Chances in 100 of a freshman obtaining an average grade of:		Percent of class	MSAT N = 195 Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	7	92	50	9	72	33
60-79	18	80	17	11	73	9
40-59	28	75	4	19	71	18
20-39	30	56	2	28	69	7
1-19	17	48	3	32	58	6

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WORTHINGTON STATE JUNIOR COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Percentile	Percent of class	HSR N = 112 Chances in 100 of a freshman obtaining an average grade of:		Percent of class	MSAT N = 76 Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	21	92	62	9	*	*
60-79	29	94	18	20	73	33
40-59	24	48	15	26	60	20
20-39	19	28	10	29	68	18
1-19	6	*	—	16	42	—

Males

Percentile	Percent of class	HSR N = 230 Chances in 100 of a freshman obtaining an average grade of:		Percent of class	MSAT N = 151 Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	14	85	58	10	87	53
60-79	15	74	9	11	71	35
40-59	23	56	12	20	53	10
20-39	30	38	3	30	52	4
1-19	18	12	—	28	37	5

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BETHANY LUTHERAN

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Males and Females Combined

		HSR N = 71 Chances in 100 of a freshman obtaining an average grade of:			MSAT N = 77 Chances in 100 of a freshman obtaining an average grade of:	
Percentile	Percent of class	C or Higher	B or Higher	Percent of class	C or Higher	B or Higher
80-99	34	100	75	25	100	79
60-79	27	89	26	22	76	35
40-59	21	60	7	21	75	12
20-39	14	40	—	19	67	7
1-19	4	—	—	13	30	—

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CORBETT COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

		HSR N = 21 Chances in 100 of a freshman obtaining an average grade of:			MSAT N = 21 Chances in 100 of a freshman obtaining an average grade of:	
Percentile	Percent of class	C or Higher	B or Higher	Percent of class	C or Higher	B or Higher
80-99	24	*	*	24	*	*
60-79	14	*	—	10	*	*
40-59	14	*	*	14	*	*
20-39	38	*	*	10	*	—
1-19	10	—	—	43	*	—

*The number of students in this cell is not large enough to produce a reliable percentage.
—No students in this cell.

CROSIER SEMINARY

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Males

Percentile	Percent of class	HSR N = 45 Chances in 100 of a freshman obtaining an average grade of: C or Higher	HSR N = 45 Chances in 100 of a freshman obtaining an average grade of: B or Higher	Percent of class	MSAT N = 46 Chances in 100 of a freshman obtaining an average grade of: C or Higher	MSAT N = 46 Chances in 100 of a freshman obtaining an average grade of: B or Higher
80-99	22	100	70	48	100	50
60-79	27	100	75	26	100	42
40-59	18	*	—	13	*	*
20-39	20	*	*	4	*	—
1-19	13	*	—	9	*	—

*The number of students in this cell is not large enough to produce a reliable percentage.
—No students in this cell.

GOLDEN VALLEY LUTHERAN COLLEGE

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

		HSR N = 92			MSAT N = 77	
Percentile	Percent of class	Chances in 100 of a freshman obtaining an average grade of:		Percent of class	Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	17	94	56	16	92	67
60-79	25	87	30	10	*	*
40-59	22	70	15	16	83	42
20-39	29	78	7	22	77	12
1-19	7	*	*	36	64	7

Males

		HSR N = 64			MSAT N = 54	
Percentile	Percent of class	Chances in 100 of a freshman obtaining an average grade of:		Percent of class	Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	5	*	*	4	*	—
60-79	19	92	33	19	60	20
40-59	25	69	19	17	*	*
20-39	22	36	—	13	*	—
1-19	30	21	—	48	38	8

*The number of students in this cell is not large enough to produce a reliable percentage.
—No students in this cell.

ST. MARY'S — MINNEAPOLIS

Norms and Expectancy Tables for First Year Grade Point Average Based on Freshmen Entering College in Fall of 1968.

Females

Per-centile	Per-cent of class	HSR N = 164		Per-cent of class	MSAT N = 131	
		Chances in 100 of a freshman obtaining an average grade of:			Chances in 100 of a freshman obtaining an average grade of:	
		C or Higher	B or Higher		C or Higher	B or Higher
80-99	18	86	41	10	77	39
60-79	26	74	19	15	75	15
40-59	30	59	4	31	73	20
20-39	19	52	3	21	52	4
1-19	8	15	—	23	37	3

*The number of students in this cell is not large enough to produce a reliable percentage.
—No students in this cell.

FREQUENCY OF STRONG VOCATIONAL INTEREST BLANK (SVIB) SCORES AMONG MINNESOTA HIGH SCHOOL SENIORS*

Edwin Gary Joselyn

Students and their counselors interpreting SVIB profiles often wonder how a profile compares with that of a "typical" senior. There seems to be a need for some kind of reference or norm to help determine whether a student's interests are quite different from those of his peers, and various reports of normative data have appeared in the SVIB literature from time to time.**

Tables 1 and 2 present percentage distributions of letter grades for Minnesota seniors who took SVIB through the Minnesota High School State-Wide Testing Program in 1966-67. Of the 310 schools which used SVIB with their seniors through the Program that year, 250 administered the instrument to all senior boys and 245 to all senior girls, a total of 8,168 boys and 7,263 girls. Only seniors from schools which tested all the boys or all the girls are included in the distributions in Tables 1 and 2. This was done to obtain a better cross-section of Minnesota seniors since schools which use SVIB with less than the entire class tend to test only brighter, "college-bound," seniors.

There may be some bias in these data, however, since the schools whose seniors are included represent a higher proportion of smaller, out-State communities. Nevertheless, because of the large N's (about one-quarter of the entire Minnesota class of 1967) and because the data include only schools where all seniors were tested, these tables are believed to be a good representation of Minnesota seniors.

These tables should help students and their counselors spot ways in which their interests are alike or different from other Minnesota seniors. For example, "A" scores on the Social Worker or Minister scales are much rarer among boys than "A" scores on the Farmer or Printer scales, and are probably more important.

High school senior boys tend to get high scores in Group IV, the Technical-Outdoor group, while many girls score high on the Secretary, Office Worker, and Housewife scales. Both boys and girls get their lowest scores on the Social Services areas. (Other studies have shown that men and women receive considerably higher scores in the Social Services area by age 25.) Notice that there are few scales on which many girls get very high scores. "A's" other than in the Secretarial and Housewife scales are fairly rare for girls.

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*Reprinted from *Student Counseling Bureau Newsletter*, University of Minnesota, Vol. 20, No. 1, February, 1968.

**See Layton, W. L. *Counseling Use of the Strong Vocational Interest Blank*, Minneapolis, University of Minnesota Press, 1958, for distributions of SVIB scores for Minnesota seniors of 1955. Some of these tables are reproduced in the State-Wide Manual, *Counseling and the Use of Tests*, Revised.

PERCENTAGE DISTRIBUTION OF SCORES ON STRONG VOCATIONAL INTEREST BLANK GIVEN TO 8168 MALE MINNESOTA HIGH SCHOOL SENIORS, FALL, 1966

Occupational Scales		GRADE SCORES					
		C	C+	B–	B	B+	A
I.	Dentist	15	10	18	19	18	19
	Osteopath	36	23	20	13	7	3
	Veterinarian	11	11	16	19	20	24
	Physician	37	20	16	12	7	7
	Psychiatrist	86	6	4	2	1	1
	Psychologist	80	11	5	3	1	1
	Biologist	62	14	11	6	3	3
II.	Architect	26	15	18	15	13	14
	Mathematician	67	15	10	6	2	1
	Physicist	61	15	11	8	3	2
	Chemist	44	18	13	11	7	7
	Engineer	29	14	15	16	12	14
III.	Production Manager	14	14	21	22	17	11
	Army Officer	51	16	15	8	6	3
	Air Force Officer	30	20	19	15	10	7
IV.	Carpenter	19	9	11	11	13	38
	Forest Service Man	40	14	17	14	7	8
	Farmer	6	5	10	11	16	52
	Math-Science Teacher	24	20	20	17	10	8
	Printer	5	6	10	13	13	53
	Policeman	33	20	20	15	8	4
V.	Personnel Director	80	9	6	3	2	1
	Public Administrator	63	13	12	6	3	3
	Rehabilitation Counselor	74	11	7	4	2	2
	YMCA Secretary	55	15	10	8	6	6
	Social Worker	79	8	5	4	2	3
	Social Science Teacher	35	18	17	13	8	8
	School Superintendent	90	5	2	2	1	0
	Minister	93	3	2	1	1	1
VI.	Librarian	69	15	7	5	2	2
	Artist	23	18	18	16	13	13
	Music Performer	8	12	23	25	16	16
	Music Teacher	60	17	12	5	3	3
VII.	C.P.A. Owner	76	11	7	4	1	1
VIII.	Senior C.P.A.	42	18	16	12	7	5
	Accountant	50	20	15	6	5	3
	Office Worker	24	21	21	16	8	10
	Purchasing Agent	8	9	12	18	21	33
	Banker	19	13	19	22	14	13
	Pharmacist	12	13	23	21	19	12
	Mortician	9	12	21	21	22	16
IX.	Sales Manager	26	23	22	15	8	6
	Real Estate Salesman	3	8	16	22	26	27
	Life Insurance Salesman	24	22	22	16	9	6
X.	Advertising Man	26	21	21	16	10	7
	Lawyer	31	24	18	15	8	5
	Author-Journalist	21	22	21	17	11	9
XI.	President-Manufacturing	40	22	19	10	7	3

Non-Occupational Scales	STANDARD SCORES						
	10-19	20-29	30-39	40-49	50-59	60-69	70-79
Specialization Level	11	38	38	11	2	0	0
Occupational Level	0	0	17	47	30	66	0
Masculinity-Feminity	0	22	6	23	47	21	1
Academic Achievement	28	28	21	14	7	2	0

PERCENTAGE DISTRIBUTION OF SCORES ON STRONG VOCATIONAL INTEREST BLANK GIVEN TO 7263 FEMALE MINNESOTA HIGH SCHOOL SENIORS, FALL, 1966

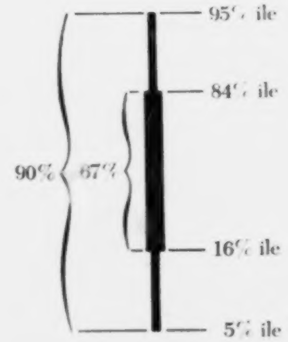
		GRADE SCORES					
Occupational Scales		C	C+	B−	B	B+	A
I.	Music Teacher	60	16	11	6	4	3
	Music Performer	30	26	18	13	8	6
II.	Artist	35	21	22	12	7	4
	Author	49	20	18	8	4	2
	Librarian	63	16	11	5	2	2
	English Teacher	85	5	4	3	1	2
III.	Social Science Teacher	85	7	3	2	1	1
	YWCA Secretary	96	2	1	0	0	0
	Social Worker	58	18	13	6	3	2
	Psychologist	92	4	2	1	1	0
	Lawyer	80	10	5	3	1	1
IV.	Life Insurance Salesman	88	7	3	1	0	0
V.	Buyer	28	21	22	15	8	6
	Business Education Teacher	20	14	16	21	13	15
	Stenographer-Secretary	1	2	10	22	27	38
	Office Worker	1	3	9	16	26	44
VI.	Elementary Teacher	11	15	23	20	16	14
	Housewife	2	4	7	18	23	46
	Home Economics Teacher	45	19	16	11	6	2
	Dietitian	30	27	21	16	5	2
VII.	Physical Education Teacher (High School)	36	25	22	12	4	0
	Physical Education Teacher (College)	81	9	5	3	1	0
	Occupational Therapist	49	19	12	11	6	3
	Physical Therapist	30	23	17	14	8	7
	Nurse	57	14	13	7	6	3
VIII.	Physician	75	12	7	3	2	1
	Dentist	59	24	9	5	2	1
	Laboratory Technician	41	20	20	10	5	4
IX.	Math-Science Teacher	57	17	13	8	3	3
	Engineer	79	12	5	2	1	1

	STANDARD SCORE						
Non-Occupational Scales	**10-19**	**20-29**	**30-39**	**40-49**	**50-59**	**60-69**	**70-79**
Masculinity-Feminity	2	6	12	37	32	10	1
Academic Achievement	15	35	27	15	6	1	0

MINNESOTA VOCATIONAL INTEREST INVENTORY (MVII) PROJECT MINI-SCORE TRAINING SUCCESS NORMS FOR MINNESOTA AREA VOCATIONAL-TECHNICAL SCHOOLS*

Description of the Profiles

The MVII Raw Score is plotted along the left side of each page. A bar for each of the nine area scales represents the range of scores for *students who have successfully completed courses in that area.* The bold part of the bar represents the range of scores for the middle two-thirds of these students. The light portion of the bar represents the middle 90 per cent of the group. That is, 90 per cent of the students in the Project Mini-Score research who successfully completed courses in a particular area had MVII scores which fell between the top and bottom ends of the light bars, and two-thirds of the students had Aptitude scores which fell between the top and bottom of the bold portion of the bars.



The nine "Area Keys" of the MVII are as follows:

H-1: *Mechanical*

Indicates interests in mechanical things, machine operation and design, or about home repairs of mechanical and simple electrical gadgets.

H-2: *Health Service*

Expresses interests in medical and hospital services, activities and occupations, or in working in medical, biological or chemical laboratories.

H-3: *Office Work*

Indicates interests in general clerical work and office machine operation, bookkeeping and accounting, and office management practices.

H-4: *Electronics*

This key expresses an interest in the maintenance, operation and construction of electronic equipment, and the repair and construction of electrical systems and devices.

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*Please refer to Page 101 for a discussion of the Project MINI-SCORE Project and a description of the norm groups.

H-5: *Food Service*

Indicates interests in the preparation of food and menu planning.

H-6: *Carpentry*

This cluster deals primarily with interests relating to carpentry, cabinet making and furniture construction.

H-7: *Sales-Office*

Two clusters of interests are indicated here. The larger deals with a variety of verbal activities, while the other relates to aesthetic interests. High scores are made by retail sales clerks, new-car salesmen, printers, and persons engaged in office work.

H-8: *Clean Hands*

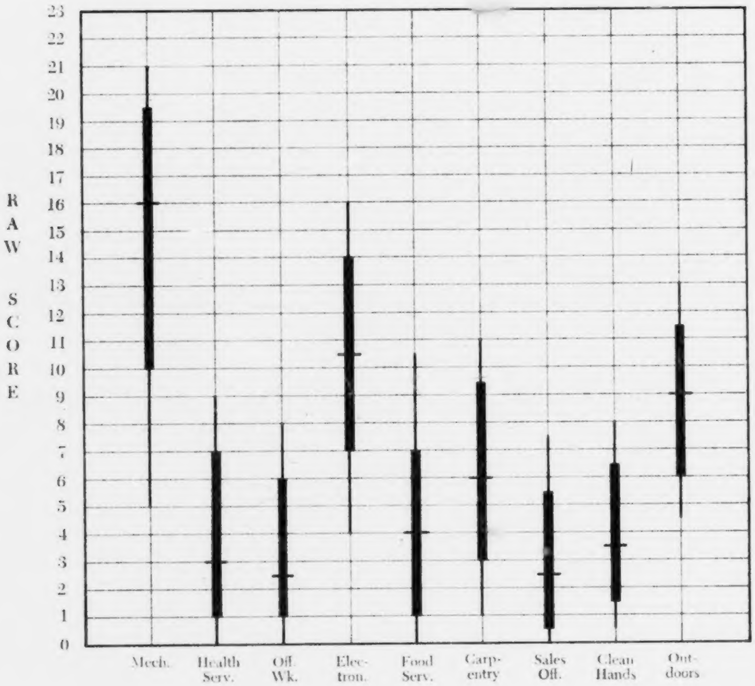
Indicates an interest in those occupations which possess "clean hands" kinds of activities.

H-9: *Outdoors*

This key reflects an interest in athletics and other outdoor activities.

MVII

Air Conditioning, Refrigeration and Appliance Repair



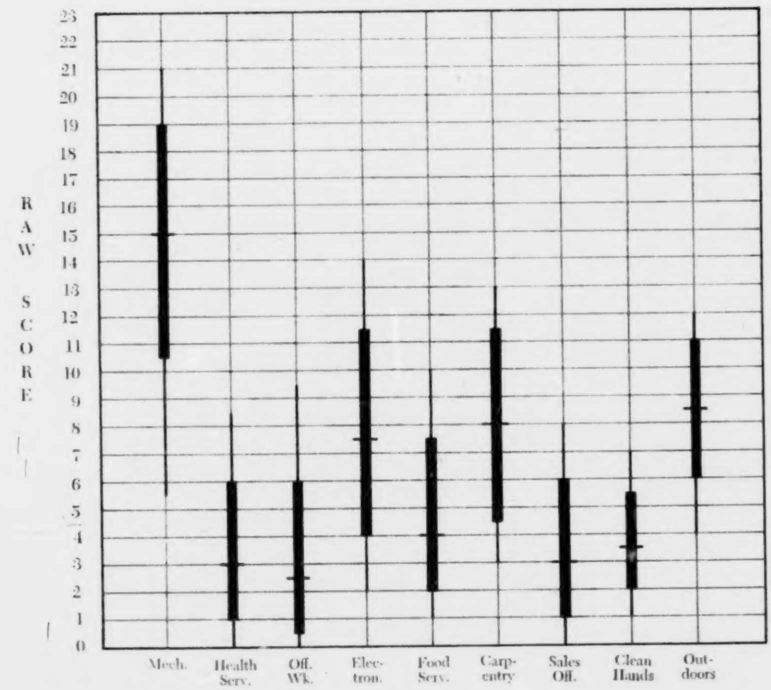
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

AIR CONDITIONING, REFRIGERATION AND APPLIANCE REPAIR

Raw Score	Mech	Health Serv	Off Wk	Electron.	Food Serv	Carpentry	Sales Off.	Clean Hands	Outdoors	Raw Score
22	99									22
21	94									21
20	87									20
19	80									19
18	74									18
17	64			99						17
16	52			96						16
15	41			92						15
14	34			85	99				98	14
13	29			74	98	99			96	13
12	22	99	99	63	97	97			91	12
11	18	98	98	54	96	96			79	11
10	16	98	98	46	94	89	99		64	10
9	14	96	97	38	91	79	98	98	52	9
8	11	90	96	29	87	70	97	95	37	8
7	9	84	92	19	84	62	92	89	24	7
6	7	80	84	12	77	52	87	80	17	6
5	5	77	77	8	62	40	80	71	9	5
4	4	69	69	4	46	30	68	60	3	4
3	4	54	57	2	36	19	56	39		3
2	4	37	39	1	25	9	44	21		2
1	2	20	20		14	3	28	10		1
0		6	5		4		10	2		0
	N=56 M=14.80 SD=4.92	N=56 M=3.41 SD=2.80	N=56 M=3.18 SD=2.53	N=56 M=10.29 SD=3.48	N=56 M=4.39 SD=3.10	N=56 M=6.05 SD=3.01	N=56 M=2.91 SD=2.46	N=56 M=3.86 SD=2.22	N=56 M=8.8 SD=2.50	

MVII

Mechanical Drafting and Design



MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

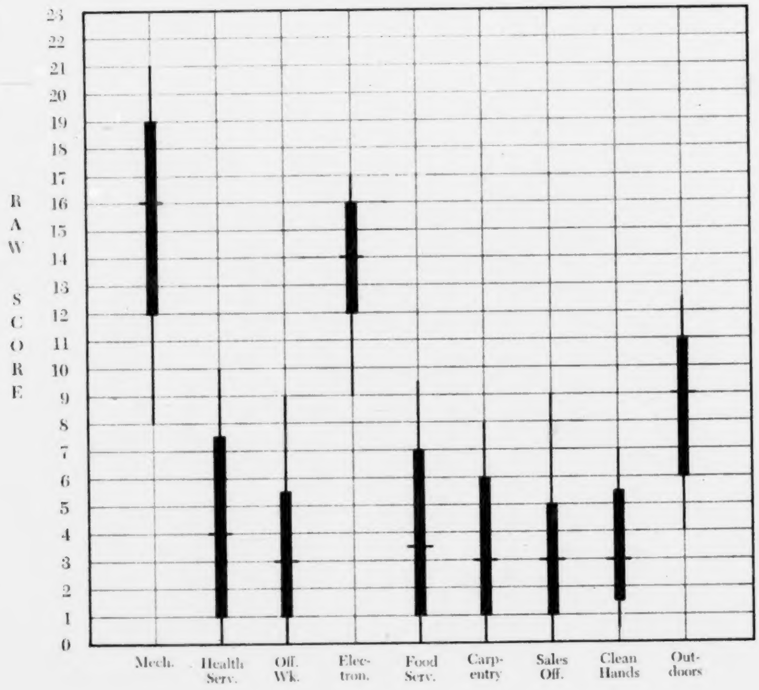
MECHANICAL DRAFTING AND DESIGN

Raw Score	Mech	Health Serv	Off Wk	Elec- tron.	Food Serv	Carp- entry	Sales Off.	Clean Hands	Out- doors	Raw Score
22	99									22
21	96									21
20	89									20
19	81									19
18	73	99								18
17	65	99	99							17
16	57	99	99	99	99	99				16
15	48	99	99	98	99	99	99			15
14	39	99	99	95	99	98	99			14
13	31	99	99	90	99	94	99		99	13
12	25	99	98	86	98	88	99		94	12
11	20	98	97	81	97	80	99		83	11
10	15	97	96	75	95	70	99		69	10
9	12	96	94	67	91	57	97	99	55	9
8	9	94	92	55	87	48	94	98	41	8
7	7	89	89	44	80	39	89	95	25	7
6	6	84	86	34	73	29	84	88	14	6
5	4	76	78	24	64	20	77	76	7	5
4	3	64	68	16	51	12	64	59	4	4
3	2	52	57	9	33	6	47	38	2	3
2	1	39	42	4	17	3	29	20	1	2
1	1	24	25	1	6	1	15	6	1	1
0	1	8	8	1	1		5	1	1	0

N=251 M=14.66 SD=4.56	N=251 M=3.32 SD=2.88	N=251 M=3.23 SD=3.00	N=251 M=7.69 SD=3.50	N=251 M=4.59 SD=2.86	N=251 M=8.06 SD=3.22	N=251 M=3.52 SD=2.49	N=251 M=3.71 SD=1.84	N=251 M=8.56 SD=2.36

MVII

Electronics



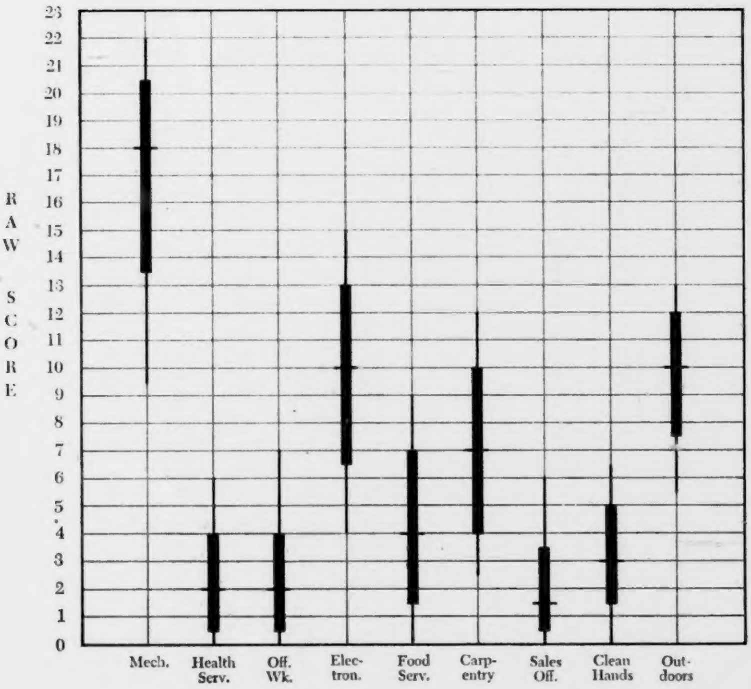
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

ELECTRONICS

Raw Score	Mech	Health Serv	Off Wk	Elec- tron.	Food Serv	Carp- entry	Sales Off.	Clean Hands	Out- doors	Raw Score
22	99									22
21	96									21
20	90		99							20
19	80		99							19
18	68		99							18
17	58	99	99	94						17
16	49	99	99	79						16
15	38	99	99	63	99				99	15
14	29	99	99	48	99		99		99	14
13	23	99	99	34	99		99		98	13
12	17	99	98	21	98		99		93	12
11	13	98	98	11	97		98		85	11
10	11	95	97	7	96	99	97	99	71	10
9	9	91	95	5	93	99	96	99	53	9
8	5	87	93	4	89	95	93	98	38	8
7	4	80	90	3	84	89	90	94	26	7
6	3	73	86	2	79	81	88	89	15	6
5	2	64	81	1	74	72	81	80	8	5
4	2	54	72	1	62	61	69	65	4	4
3	1	41	56	1	44	48	52	46	1	3
2	1	28	38	1	27	33	31	24		2
1	1	16	22	1	13	16	13	8		1
0	1	4	7		3	4	2	2		0
	N=202 M=15.50 SD=4.12	N=202 M=4.26 SD=3.19	N=202 M=3.20 SD=2.90	N=202 M=13.73 SD=2.69	N=202 M=3.96 SD=2.96	N=202 M=3.53 SD=2.41	N=202 M=3.40 SD=2.51	N=202 M=3.45 SD=1.92	N=202 M=8.59 SD=2.37	

MVII

Automotive



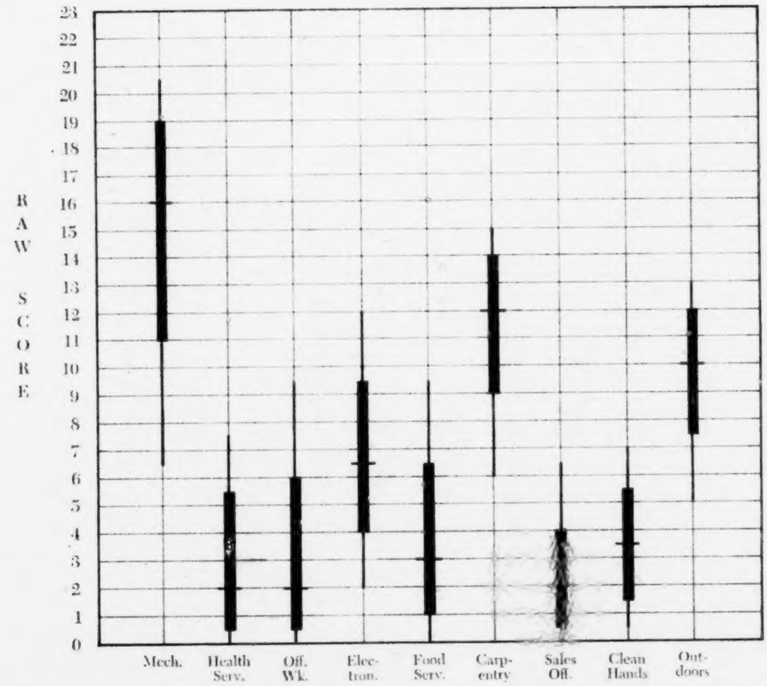
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

AUTOMOTIVE

Raw Score	Mech	Health Serv	Off Wk	Elec-tron.	Food Serv	Carp-entry	Sales Off.	Clean Hands	Out-doors	Raw Score
22	97									22
21	89									21
20	75									20
19	61									19
18	49									18
17	40			99	99					17
16	32			99	99					16
15	25		99	96	99	99				15
14	19		99	90	99	99			99	14
13	15		99	84	99	97			95	13
12	11		99	75	98	94			84	12
11	8	99	99	64	97	89			68	11
10	6	99	99	53	96	82	99	99	51	10
9	4	99	98	41	95	71	99	99	34	9
8	2	98	97	30	91	60	99	99	21	8
7	2	97	95	21	85	49	98	97	12	7
6	1	95	93	14	77	38	96	92	7	6
5	1	90	90	8	67	26	92	84	3	5
4	1	82	83	5	54	15	86	71	1	4
3	1	70	74	3	38	8	77	53	1	3
2	1	53	57	1	23	3	62	31	1	2
1		32	35	1	9	1	39	12	1	1
0		10	12		2	1	12	3	1	0
	N=495 M=17.12 SD=3.75	N=495 M=2.23 SD=2.02	N=495 M=2.20 SD=2.36	N=495 M=9.67 SD=3.25	N=495 M=4.19 SD=2.74	N=495 M=7.18 SD=2.97	N=495 M=1.89 SD=1.83	N=495 M=3.06 SD=1.81	N=495 M=9.75 SD=2.21	

MVII

Carpentry



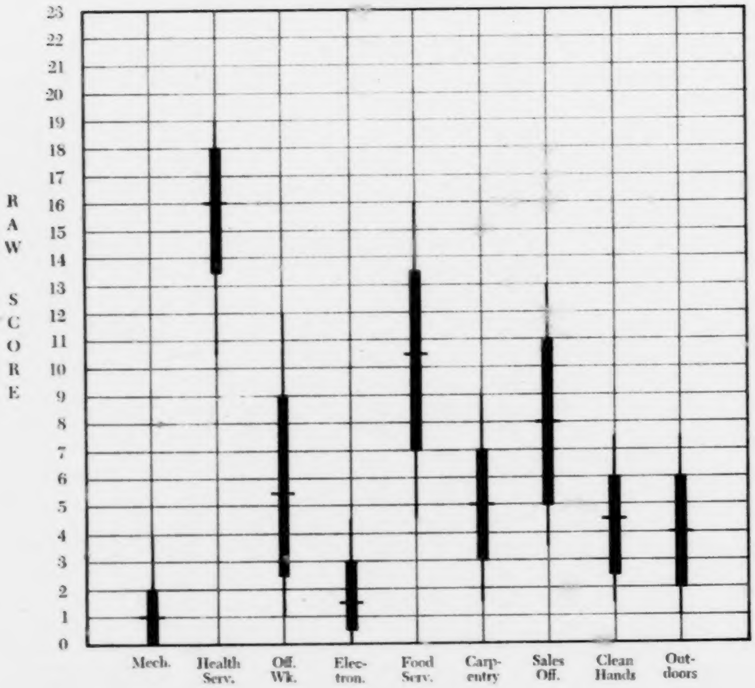
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

CARPENTRY

Raw Score	Mech	Health Serv	Off Wk	Elec-tron.	Food Serv	Carp-entry	Sales Off.	Clean Hands	Out-doors	Raw Score
22										22
21	98									21
20	92									20
19	81									19
18	69									18
17	60		99							17
16	52		99	99	99	99				16
15	44		99	99	99	94			99	15
14	36		99	99	99	85			98	14
13	29		99	97	99	71			94	13
12	22	99	98	95	98	54			86	12
11	18	99	97	93	98	39			70	11
10	14	98	96	87	96	29	99		49	10
9	10	98	94	80	94	20	98		32	9
8	9	96	92	70	90	11	98	99	20	8
7	6	94	89	57	86	7	96	97	13	7
6	4	88	85	42	81	4	94	90	8	6
5	2	81	79	25	75	2	90	77	4	5
4	1	74	72	14	64	2	82	59	2	4
3	1	65	60	9	49	1	72	39	1	3
2	1	50	46	5	32	1	55	21		2
1	1	34	28	2	15		34	8		1
0		14	9	1	4		12	1		0
	N=181 M=14.99 SD=4.26	N=181 M=2.60 SD=2.58	N=181 M=3.09 SD=3.10	N=181 M=6.75 SD=2.81	N=181 M=3.71 SD=2.90	N=181 M=11.31 SD=2.69	N=181 M=2.20 SD=2.10	N=181 M=3.59 SD=1.78	N=181 M=9.73 SD=2.28	

MVII

Practical Nursing



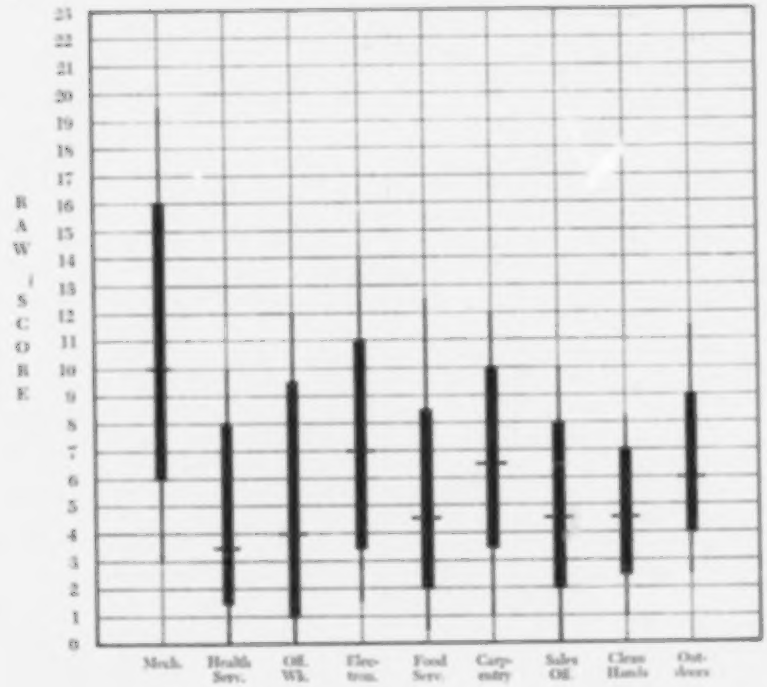
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

PRACTICAL NURSING

Raw Score	Mech	Health Serv	Off Wk	Elec-tron.	Food Serv	Carp-entry	Sales Off.	Clean Hands	Out-doors	Raw Score
22										22
21										21
20										20
19		96			99					19
18		84			99					18
17		66	99		98					17
16		45	99		95					16
15		29	99		91		99			15
14		19	98		86	99	99			14
13	99	13	97		78	99	95			13
12	99	9	95		66	99	91		99	12
11	99	6	92		54	99	84		99	11
10	99	4	89		44	99	74	99	99	10
9	99	2	83		35	96	63	99	99	9
8	99	2	75		25	90	49	97	97	8
7	99	1	65	99	16	81	34	92	92	7
6	98	1	54	99	10	68	23	80	84	6
5	97	1	42	97	6	50	15	63	71	5
4	95		31	93	4	31	8	43	55	4
3	91		20	83	2	16	3	25	34	3
2	84		12	65	1	7	1	9	15	2
1	64		6	40	1	2	1	2	4	1
0	26		1	12	1	1		1	1	0
	N=300 M=.99 SD=1.32	N=300 M=15.75 SD=2.93	N=300 M=5.91 SD=3.31	N=300 M=1.61 SD=1.44	N=300 M=10.70 SD=3.36	N=300 M=5.11 SD=2.11	N=300 M=6.13 SD=2.76	N=300 M=4.40 SD=1.86	N=300 M=3.97 SD=1.91	

MVII

Printing and Graphic Arts



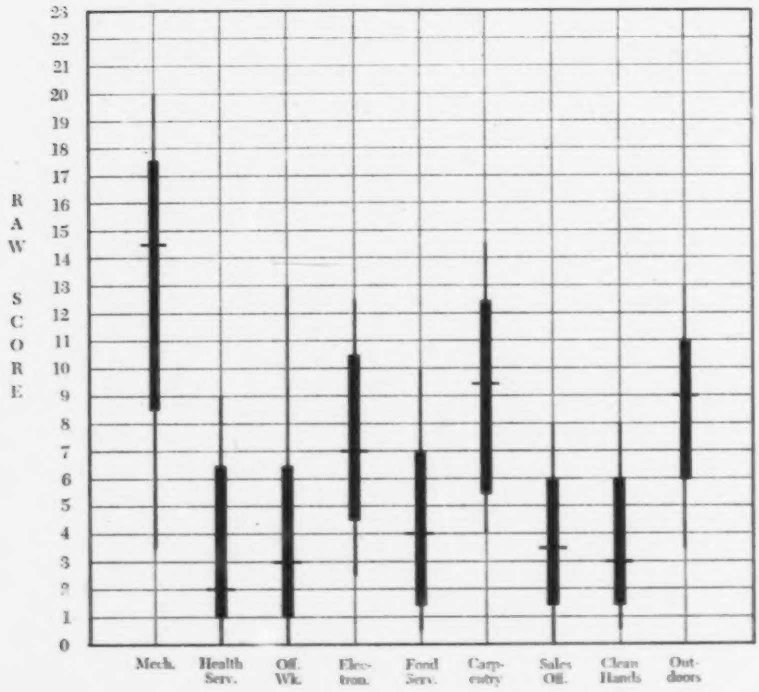
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

PRINTING AND GRAPHIC ARTS

Raw Score	Mech	Health Serv	Off Wk	Elec-tron.	Food Serv	Carp-entry	Sales Off.	Clean Hands	Out-doors	Raw Score
22										22
21	98									21
20	96									20
19	94	99	99							19
18	91	99	97		99					18
17	86	99	97		99					17
16	82	99	97	99	98					16
15	80	98	97	97	97	99				15
14	76	97	96	96	96	97				14
13	70	97	96	92	96	97	99		99	13
12	62	97	95	87	94	96	99		97	12
11	55	97	91	82	92	90	97		94	11
10	49	96	86	76	91	81	95	99	90	10
9	40	92	81	71	87	72	93	97	84	9
8	30	84	76	62	82	64	86	94	74	8
7	23	76	74	51	74	54	76	86	63	7
6	17	71	69	41	65	44	70	75	49	6
5	13	65	59	30	57	36	61	60	32	5
4	10	56	49	19	46	24	44	43	18	4
3	6	41	37	12	32	12	27	25	9	3
2	2	23	25	7	18	5	16	11	3	2
1	1	11	14	2	9	1	11	4		1
0		3	4		2		5			0
	N = 69 M = 10.09 SD = 4.91	N = 69 M = 4.50 SD = 3.41	N = 69 M = 5.09 SD = 4.17	N = 69 M = 7.24 SD = 3.63	N = 69 M = 5.15 SD = 3.66	N = 69 M = 6.76 SD = 3.23	N = 69 M = 4.70 SD = 2.86	N = 69 M = 4.56 SD = 2.09	N = 69 M = 6.39 SD = 2.58	

MVII

Architectural Drafting



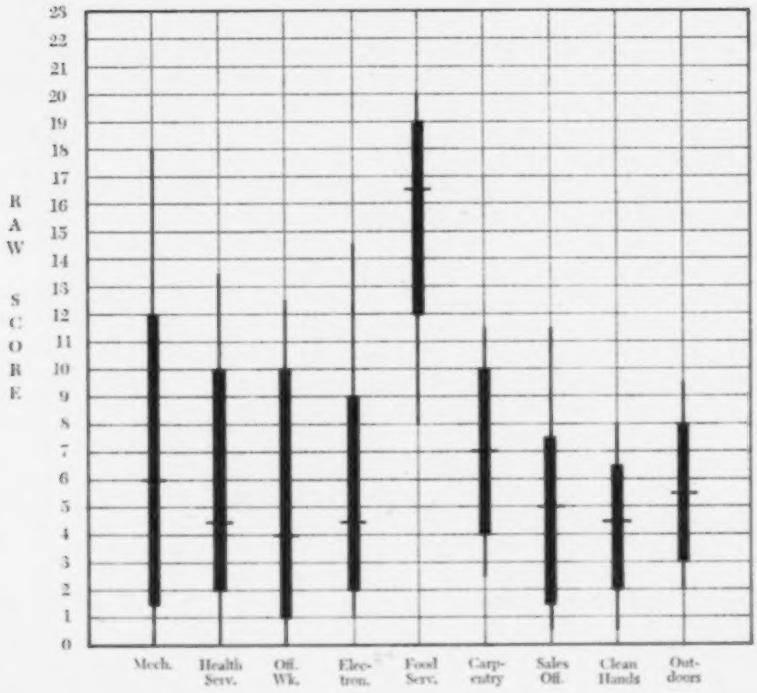
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

ARCHITECTURAL DRAFTING

Raw Score	Mech	Health Serv	Off Wk	Elec-tron.	Food Serv	Carp-entry	Sales Off.	Clean Hands	Out-doors	Raw Score
22	99									22
21	98									21
20	96									20
19	92									19
18	87									18
17	79									17
16	66									16
15	54					97				15
14	43		99	99	99	92			98	14
13	35		95	97	97	88			94	13
12	31		92	92	96	77			92	12
11	27	99	92	87	96	67			86	11
10	25	97	91	80	96	57			69	10
9	21	95	90	72	92	46	99	98	51	9
8	13	91	88	64	86	39	94	95	38	8
7	8	85	85	52	82	31	88	93	26	7
6	8	80	81	36	73	23	83	87	16	6
5	7	74	74	22	58	12	75	75	9	5
4	6	68	61	12	50	5	59	64	6	4
3	4	62	47	8	41	1	40	50	3	3
2	2	45	34	3	25		24	26	1	2
1	1	21	19		10		13	7		1
0		5	5		2		5	1		0
	N=53 M=13.49 SD=4.64	N=53 M=3.28 SD=2.84	N=53 M=3.98 SD=3.55	N=53 M=7.26 SD=2.91	N=53 M=4.45 SD=3.09	N=53 M=9.15 SD=3.25	N=53 M=3.70 SD=2.30	N=53 M=3.53 SD=2.07	N=53 M=8.60 SD=2.59	

MVII

Chefs and Cooks



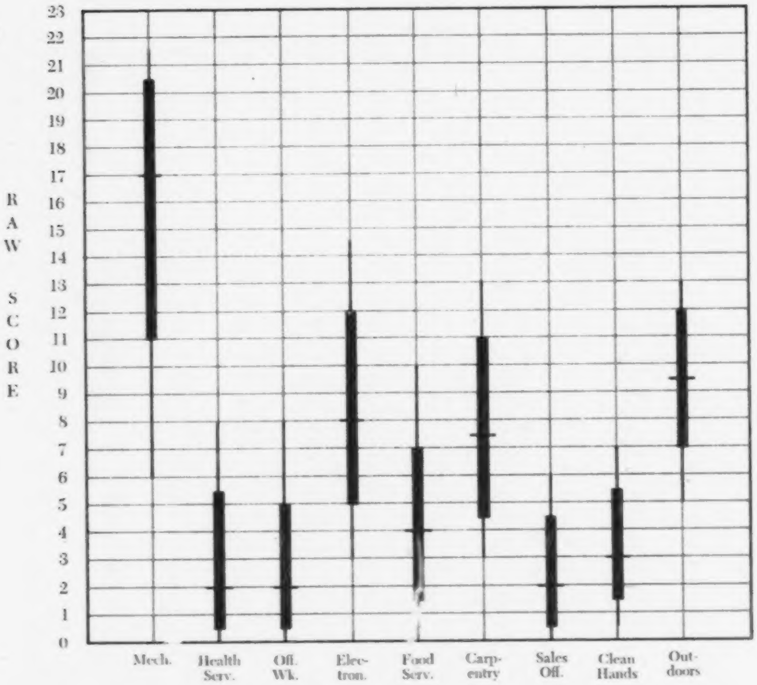
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

CHEFS AND COOKS

Raw Score	Mech	Health Serv	Off Wk	Elec- tron.	Food Serv	Carp- entry	Sales Off.	Clean Hands	Out- doors	Raw Score
22										22
21	98									21
20	97				96					20
19	97	99			84					19
18	95	98			75					18
17	93	98			62					17
16	93	98	99	99	43					16
15	92	98	98	97	33					15
14	90	96	98	94	28	99				14
13	87	94	96	93	22	98	98			13
12	82	91	93	93	16	97	96			12
11	79	88	89	90	13	93	94			11
10	75	84	84	87	9	84	93	98	98	10
9	70	75	76	84	6	74	92	97	92	9
8	64	70	70	80	5	65	88	95	83	8
7	56	69	66	75	3	52	79	90	73	7
6	52	63	61	68	2	38	64	78	60	6
5	46	55	54	59	2	26	47	60	46	5
4	35	45	48	46	2	16	34	43	30	4
3	27	31	40	32	2	7	28	29	14	3
2	21	17	27	16	1	2	22	16	4	2
1	14	10	14	4		2	12	7	1	1
0	5	4	5	1		1	2	2		0
	N=61 M=6.82 SD=5.34	N=61 M=5.66 SD=4.20	N=61 M=5.33 SD=4.12	N=61 M=5.33 SD=3.76	N=61 M=15.46 SD=3.66	N=61 M=6.97 SD=2.78	N=61 M=5.00 SD=3.08	N=61 M=4.36 SD=2.19	N=61 M=5.49 SD=2.23	

MVII

Welding



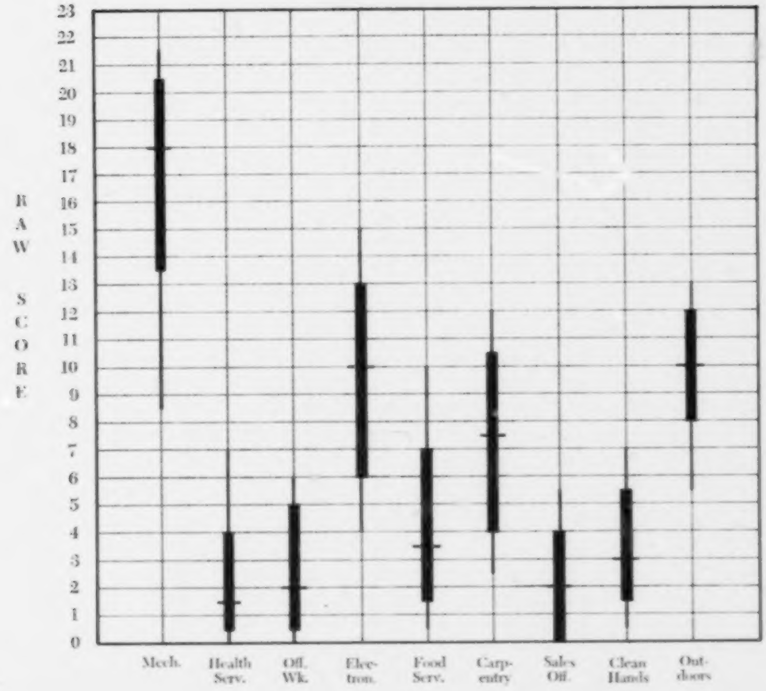
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

WELDING

Raw Score	Mech	Health Serv	Off Wk	Elec-tron.	Food Serv	Carp-entry	Sales Off.	Clean Hands	Out-doors	Raw Score
22	98									22
21	90									21
20	80									20
19	70				99					19
18	60				99					18
17	50			99	99					17
16	43			99	99					16
15	35	99		97	99	99				15
14	28	99	99	94	98	97			99	14
13	23	99	99	91	97	95			95	13
12	19	99	99	85	97	91			87	12
11	16	99	98	78	96	85			73	11
10	13	99	97	71	95	77		99	56	10
9	10	98	96	61	94	68		99	41	9
8	8	95	95	48	91	57	99	98	28	8
7	6	91	93	37	85	45	98	95	18	7
6	5	87	89	28	76	33	94	89	10	6
5	3	80	84	19	65	22	88	78	5	5
4	1	72	78	10	53	13	79	64	2	4
3	1	60	69	5	38	6	66	48	1	3
2	1	46	55	2	23	2	51	29	1	2
1	1	29	33	1	9	1	32	12		1
0	1	10	11	1	1	1	9	3		0
	N=254 M=15.80 SD=4.60	N=254 M=2.86 SD=2.64	N=254 M=2.56 SD=2.73	N=254 M=8.21 SD=3.36	N=254 M=4.35 SD=3.07	N=254 M=7.50 SD=3.08	N=254 M=2.34 SD=1.97	N=254 M=3.35 SD=2.01	N=254 M=9.36 SD=2.41	

MVII

Farm Equipment Mechanics



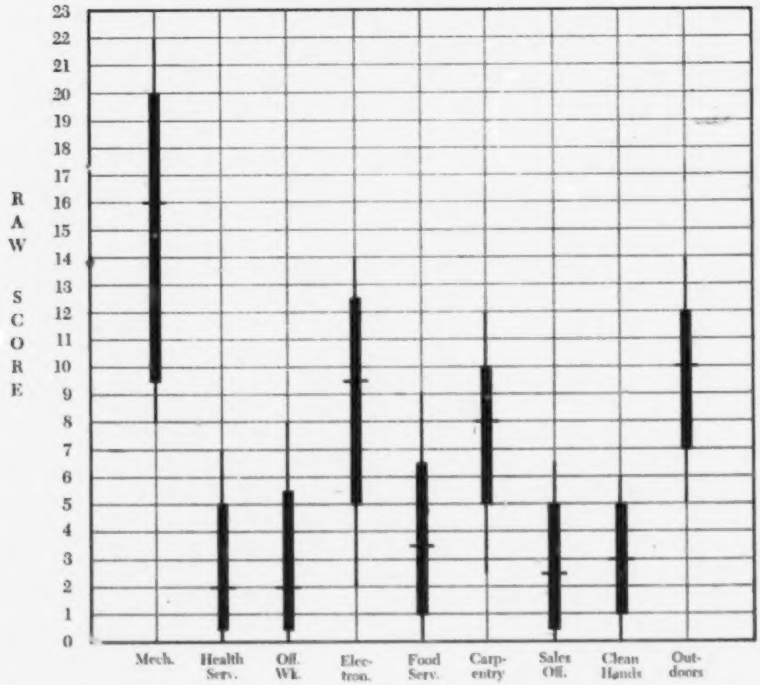
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

FARM EQUIPMENT MECHANICS

Raw Score	Mech	Health Serv	Off Wk	Elec-tron.	Food Serv	Carp-entry	Sales Off.	Clean Hands	Out-doors	Raw Score
22	99									22
21	91									21
20	79									20
19	67									19
18	53									18
17	40	99		99						17
16	30	99		98						16
15	23	99		96						15
14	19	99		90		99			99	14
13	14	99		81	99	97			95	13
12	10	99		76	98	94			85	12
11	8	98		67	97	89	99		67	11
10	7	97		53	95	76	99		48	10
9	6	97		40	92	62	99		31	9
8	3	96	99	30	88	53	99	99	16	8
7	3	95	98	23	83	45	99	97	8	7
6	3	93	94	17	76	33	97	90	6	6
5	3	91	85	10	68	24	94	78	4	5
4	2	87	77	5	56	15	86	61	2	4
3	1	76	65	3	38	8	69	47	1	3
2	1	62	50	1	22	3	51	30	1	2
1		40	29		10	1	35	10		1
0		12	8		2	1	14	1		0
	N=72 M=16.90 SD=3.93	N=72 M=2.14 SD=2.75	N=72 M=2.44 SD=1.99	N=72 M=9.64 SD=3.31	N=72 M=4.26 SD=2.87	N=72 M=7.47 SD=3.06	N=72 M=2.11 SD=1.97	N=72 M=3.37 SD=1.86	N=72 M=9.85 SD=2.19	

MVII

Plumbing and Sheet Metal



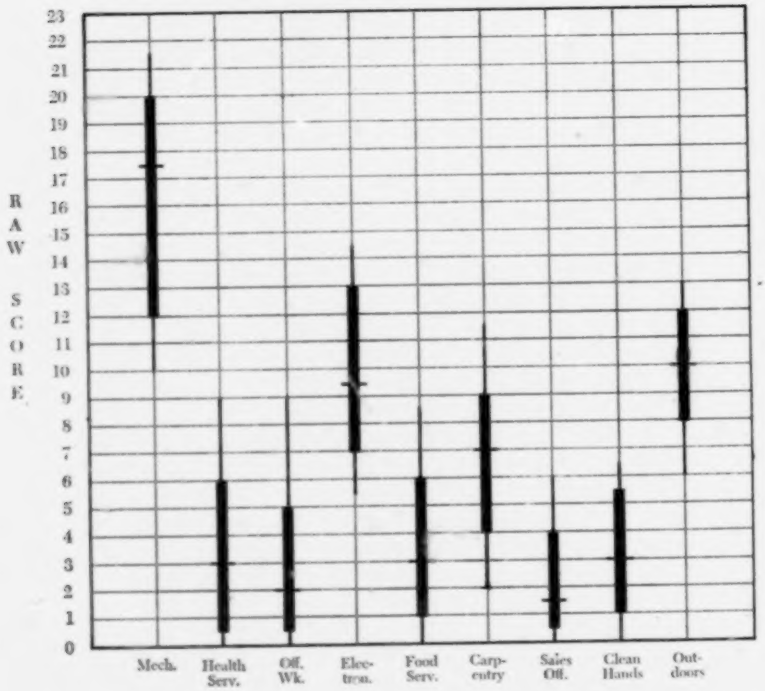
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

PLUMBING AND SHEET METAL

Raw Score	Mech	Health Serv	Off Wk	Elec-tron.	Food Serv	Carp-entry	Sales Off.	Clean Hands	Out-doors	Raw Score
22	96									22
21	90									21
20	83									20
19	73	99								19
18	65	98								18
17	57	98								17
16	47	98				99				16
15	40	98				98			99	15
14	37	98		96		97			96	14
13	33	98	99	89	99	96			92	13
12	31	98	98	80	98	95			85	12
11	28	98	98	66	98	92			71	11
10	21	98	97	54	98	86			55	10
9	13	98	96	47	95	71			39	9
8	5	98	95	40	92	54			24	8
7	2	95	92	32	88	40	98	98	16	7
6	2	88	86	24	81	26	92	94	10	6
5	1	83	77	16	70	14	82	85	4	5
4		76	66	12	57	9	65	69	2	4
3		63	59	10	46	6	54	53	1	3
2		49	54	4	30	2	46	33		2
1		33	36		13		30	13		1
0		12	10		4		10	3		0
	N=49 M=15.27 SD=4.68	N=49 M=2.76 SD=3.18	N=49 M=2.88 SD=2.93	N=49 M=8.80 SD=3.55	N=49 M=3.82 SD=2.74	N=49 M=7.65 SD=2.72	N=49 M=2.73 SD=2.17	N=49 M=3.02 SD=1.77	N=49 M=9.55 SD=2.50	

MVII

Fluid Power Technology



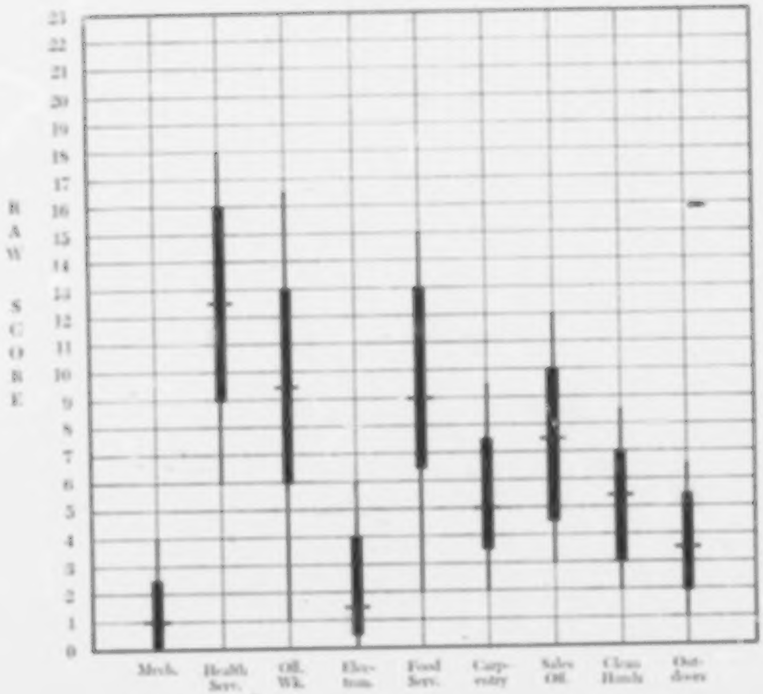
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

FLUID POWER TECHNOLOGY

Raw Score	Mech	Health Serv	Off Wk	Elec-tron.	Food Serv	Carp-entry	Sales Off.	Clean Hands	Out-doors	Raw Score
22	99									22
21	91									21
20	80									20
19	72									19
18	58									18
17	45									17
16	37									16
15	28			98					99	15
14	22			93					98	14
13	19			85					95	13
12	16		99	78		97			85	12
11	11		98	71		94			73	11
10	6	98	97	56		92	99		56	10
9	3	94	95	40	98	81	98		34	9
8	1	91	93	26	93	66	98		18	8
7		88	91	17	89	53	97	98	8	7
6		81	87	9	84	41	95	92	4	6
5		70	82	2	73	30	89	77	2	5
4		59	77		60	18	81	59		4
3		50	68		45	10	72	47		3
2		38	51		27	5	58	35		2
1		24	30		12		38	18		1
0		8	10		2		13	4		0
	N=51 M=16.63 SD=3.98	N=51 M=3.40 SD=2.81	N=51 M=2.71 SD=2.75	N=51 M=9.75 SD=2.00	N=51 M=3.67 SD=2.31	N=51 M=6.63 SD=2.63	N=51 M=2.12 SD=2.14	N=51 M=3.20 SD=1.99	N=51 M=9.78 SD=2.00	

MVII

Dental Assistant



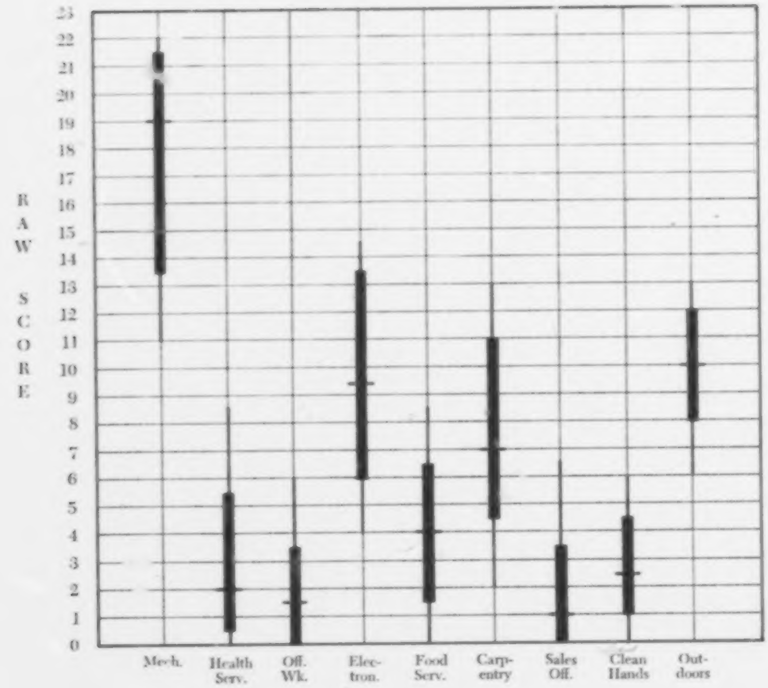
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

DENTAL ASSISTANT

Raw Score	Mech	Health Serv	Off Wk	Elec-tron.	Food Serv	Carp-entry	Sales Off.	Clean Hands	Out-doors	Raw Score
22										22
21										21
20										20
19		99	99							19
18		95	98							18
17		90	97							17
16		85	93		98					16
15		79	89		94					15
14		69	87		89					14
13		55	83		85		98			13
12		45	79		74		94			12
11		37	72		65	99	92			11
10	99	26	59		59	96	86			10
9	98	18	45	99	49	93	72	99		9
8	98	13	36	98	34	87	58	93		8
7	98	9	27	97	20	77	46	81	98	7
6	98	5	17	94	15	64	36	62	90	6
5	98	4	9	90	13	47	23	40	79	5
4	94	4	6	86	10	25	13	26	62	4
3	87	2	6	76	7	10	5	13	39	3
2	77		6	59	5	4		3	18	2
1	61		5	32	2	2			5	1
0	26		2	8		1				0
	N=32 M=1.15 SD=1.77	N=32 M=12.15 SD=3.63	N=32 M=9.37 SD=3.97	N=32 M=2.12 SD=1.92	N=32 M=9.29 SD=3.61	N=32 M=5.44 SD=2.14	N=32 M=7.27 SD=2.65	N=32 M=5.31 SD=1.77	N=32 M=3.38 SD=1.60	

MVII

Diesel Mechanics



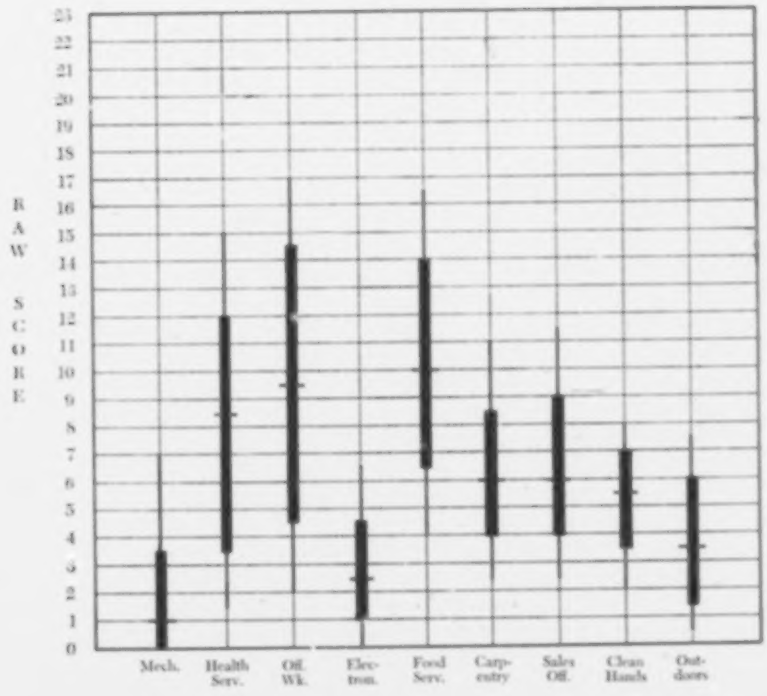
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

DIESEL MECHANICS

Raw Score	Mech	Health Serv	Off Wk	Elec-tron.	Food Serv	Carp-entry	Sales Off.	Clean Hands	Out-doors	Raw Score
22	93									22
21	80									21
20	62				99					20
19	47				99					19
18	41				99					18
17	35				99					17
16	28			99	99					16
15	24	99		97	99					15
14	20	99		91	99	99				14
13	14	99		79	99	96			97	13
12	11	99	99	72	98	92			87	12
11	6	99	99	67	97	85			67	11
10	3	98	99	54	97	76			46	10
9	3	96	99	42	96	70		99	30	9
8	3	94	98	33	94	61	99	99	18	8
7	2	91	97	25	88	46	96	98	10	7
6	1	87	96	18	78	34	93	95	4	6
5		81	92	10	64	24	91	88	1	5
4		77	86	4	50	14	86	81	1	4
3		70	76	1	40	9	78	66		3
2		56	61		26	4	67	41		2
1		35	41		12		46	17		1
0		12	15		3		17	4		0
	N=69 M=17.78 SD=3.96	N=69 M=2.50 SD=2.89	N=69 M=1.93 SD=2.16	N=69 M=9.58 SD=3.29	N=69 M=4.17 SD=3.10	N=69 M=7.42 SD=3.09	N=69 M=1.77 SD=2.04	N=69 M=2.62 SD=1.77	N=69 M=9.90 SD=1.95	

MVII

Cosmetology



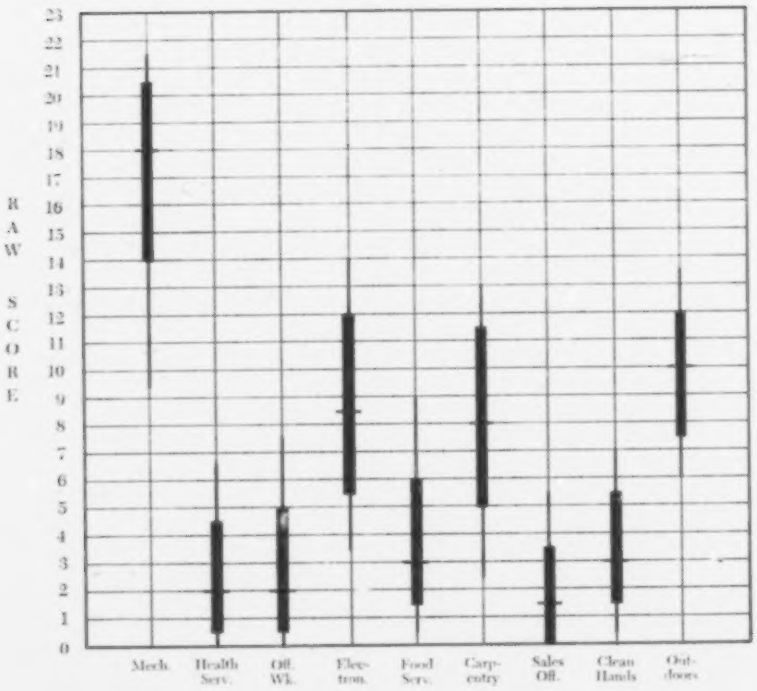
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

COSMETOLOGY

Raw Score	Mech	Health Serv	Off Wk	Elec- tron.	Food Serv	Carp- entry	Sales Off.	Clean Hands	Out- doors	Raw Score
22										22
21	99									21
20	99		99							20
19	99		99		99					19
18	99		97		98					18
17	99	99	94		97					17
16	99	97	91		94		99			16
15	98	95	87		89		99			15
14	98	92	81		83		99			14
13	98	87	73	99	74	99	99			13
12	98	83	70	99	66	98	97			12
11	98	76	64	99	58	96	94	99		11
10	97	66	55	99	47	94	90	99	99	10
9	96	58	45	98	38	89	84	98	98	9
8	96	51	38	97	30	79	73	94	96	8
7	95	43	32	97	21	66	61	83	93	7
6	93	35	26	94	14	51	47	64	86	6
5	91	28	20	88	10	33	33	42	73	5
4	87	21	14	78	6	18	19	24	58	4
3	80	15	9	62	3	8	8	13	41	3
2	67	9	5	38	1	3	3	6	23	2
1	48	3	2	16		1	1	2	9	1
0	18		1	4		1	1	1	1	0
	N=249 M=1.94 SD=2.94	N=249 M=7.91 SD=4.18	N=249 M=9.45 SD=4.58	N=249 M=2.81 SD=1.58	N=249 M=10.21 SD=3.78	N=249 M=6.16 SD=2.35	N=249 M=6.42 SD=2.63	N=249 M=5.24 SD=1.89	N=249 M=3.71 SD=2.09	

MVII

Machine Shop



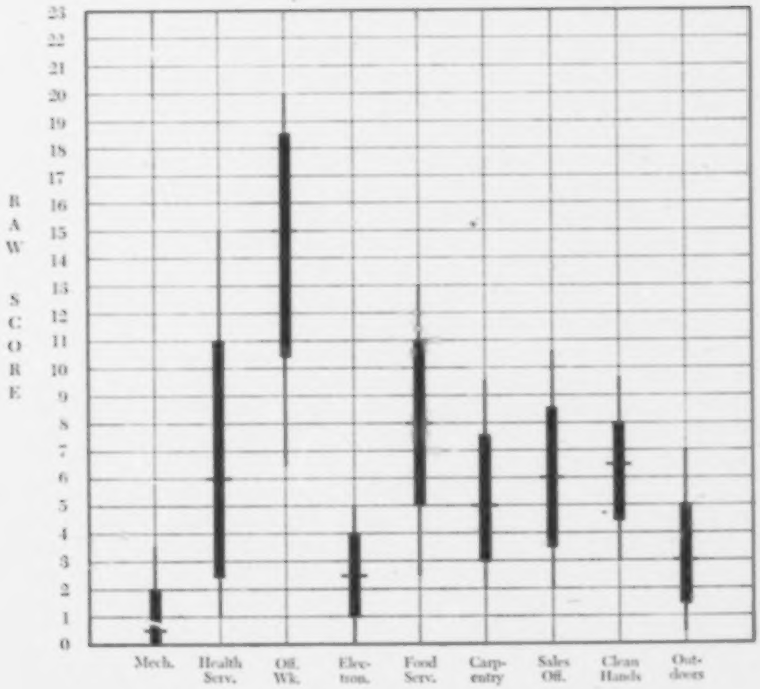
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

MACHINE SHOP

Raw Score	Mech	Health Serv	Off Wk	Elec-tron.	Food Serv	Carp-entry	Sales Off.	Clean Hands	Out-doors	Raw Score
22	98									22
21	89									21
20	78									20
19	65	99	99							19
18	50	99	99							18
17	39	99	99	99						17
16	30	99	99	99		99				16
15	23	99	99	97		99				15
14	16	99	99	95		98			99	14
13	11	99	99	92	99	94			93	13
12	8	99	98	84	98	88			82	12
11	7	99	98	75	98	79	99	99	68	11
10	6	99	98	65	96	70	99	99	52	10
9	4	98	97	53	95	59	99	99	34	9
8	4	98	96	44	92	48	99	98	20	8
7	3	97	93	35	89	37	98	94	11	7
6	2	94	89	21	83	25	97	88	5	6
5	1	88	83	12	75	17	94	79	2	5
4	1	80	76	6	63	11	89	66	1	4
3	1	70	65	3	46	6	80	45	1	3
2	1	54	50	1	27	3	64	25		2
1	1	31	29		11	1	39	10		1
0	1	9	9		2		13	2		0
	N=166 M=17.13 SD=[illegible]	N=166 M=2.40 SD=2.45	N=166 M=2.74 SD=2.80	N=166 M=8.67 SD=3.13	N=166 M=3.75 SD=2.63	N=166 M=8.15 SD=3.14	N=166 M=1.80 SD=1.81	N=166 M=3.46 SD=2.01	N=166 M=9.82 SD=2.18	

MVII

Secretarial Training



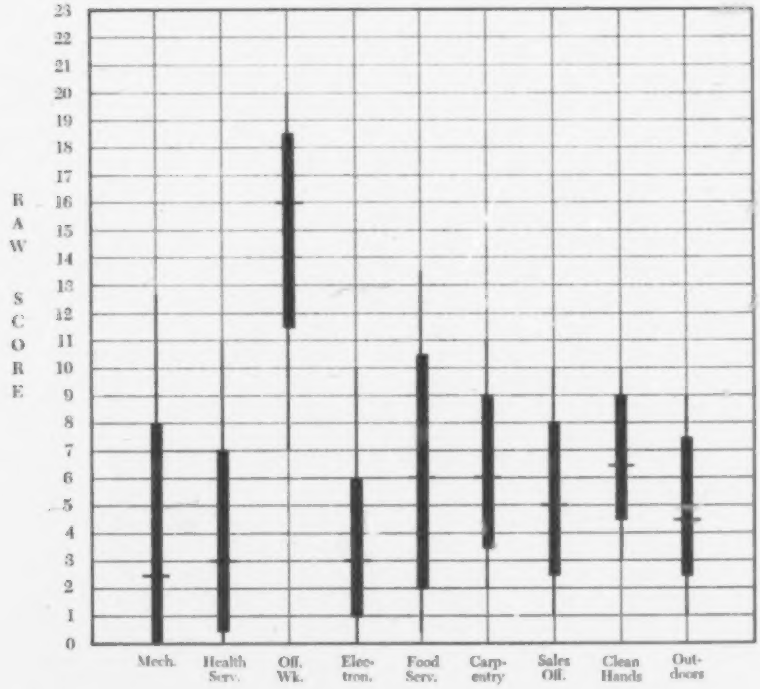
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

SECRETARIAL TRAINING

Raw Score	Mech	Health Serv	Off Wk	Elec-tron.	Food Serv	Carp-entry	Sales Off.	Clean Hands	Out-doors	Raw Score
22										22
21										21
20	99		96							20
19	99	99	87		99					19
18	99	99	78		99					18
17	99	98	68		99					17
16	99	96	57	99	99					16
15	99	95	47	99	98		99			15
14	99	93	39	99	96	99	99			14
13	99	90	31	99	94	99	99			13
12	99	86	25	99	90	99	99		99	12
11	99	82	20	99	83	99	97	99	99	11
10	99	77	15	99	74	97	94	97	99	10
9	99	71	11	99	63	93	89	91	99	9
8	98	65	8	99	51	88	80	80	98	8
7	98	58	6	99	39	79	68	63	96	7
6	98	50	4	97	28	64	53	43	92	6
5	97	41	3	94	19	46	36	24	84	5
4	96	32	2	84	11	30	23	12	68	4
3	94	23	1	66	6	15	12	5	46	3
2	88	14	1	42	4	5	4	1	25	2
1	72	6	1	18	2	2	1	1	9	1
0	30	2	1	4	1	1			1	0
	N=739 M=.84 SD=1.87	N=739 M=6.71 SD=4.35	N=739 M=14.49 SD=4.14	N=739 M=2.52 SD=1.75	N=739 M=7.93 SD=3.23	N=739 M=5.34 SD=2.24	N=739 M=5.95 SD=2.44	N=739 M=6.33 SD=1.91	N=739 M=3.31 SD=1.80	

MVII

Accounting



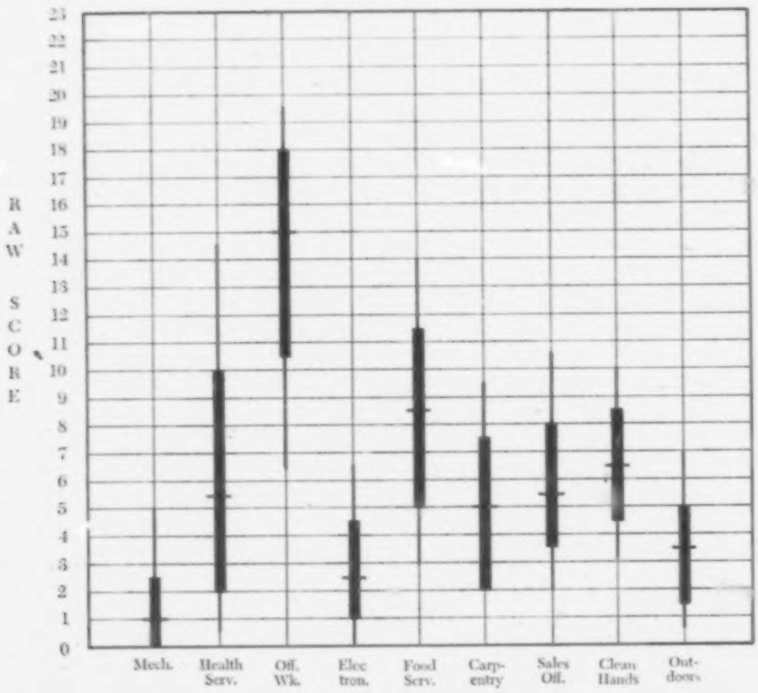
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

ACCOUNTING

Raw Score	Mech	Health Serv	Off Wk	Elec-tron.	Food Serv	Carp-entry	Sales Off.	Clean Hands	Out-doors	Raw Score
22										22
21										21
20	99		97							20
19	99	99	89							19
18	99	99	77		99					18
17	99	99	63		99					17
16	99	99	51	99	98					16
15	98	99	42	99	97	99				15
14	97	98	34	99	96	99				14
13	96	98	27	98	94	99		99		13
12	93	97	20	97	91	97	99	99	99	12
11	91	95	14	96	87	95	99	99	99	11
10	89	93	10	95	81	91	96	95	98	10
9	87	90	7	93	72	85	92	87	95	9
8	83	86	6	91	65	77	84	74	89	8
7	80	82	5	89	59	64	75	56	80	7
6	76	78	4	85	51	49	65	39	70	6
5	71	70	3	75	43	35	53	25	59	5
4	64	59	2	63	37	20	39	12	44	4
3	56	47	2	49	28	10	24	5	28	3
2	46	35	2	31	18	4	12	2	13	2
1	33	21	1	13	8	1	5	1	5	1
0	13	7	1	3	2		2	1	1	0
	N=398 M=3.82 SD=4.22	N=398 M=3.99 SD=3.55	N=398 M=14.96 SD=3.[illegible]	N=398 M=3.73 SD=2.92	N=398 M=6.25 SD=4.12	N=398 M=6.24 SD=2.61	N=398 M=5.05 SD=2.63	N=398 M=6.55 SD=2.16	[illegible] M [illegible] 70 S [illegible] 3	

MVII

Clerical Training



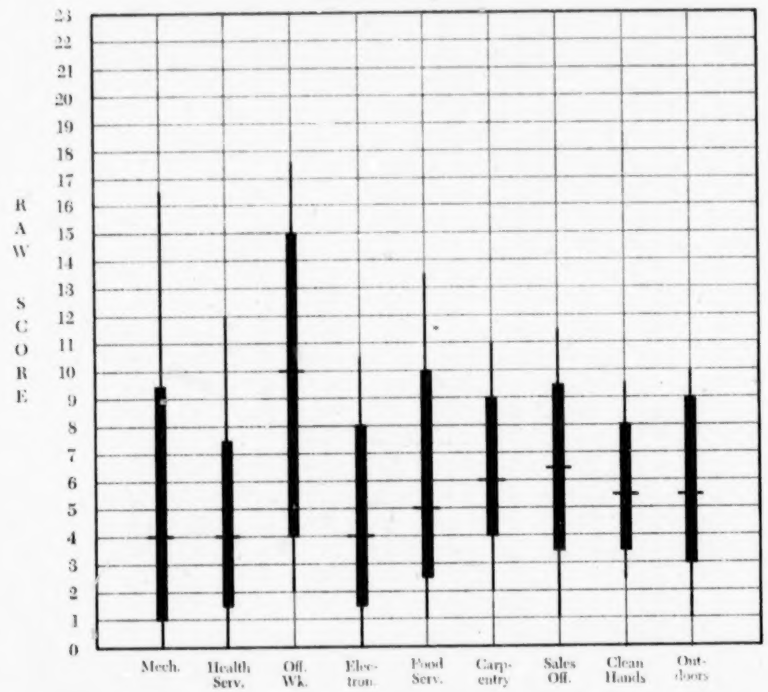
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

CLERICAL TRAINING

Raw Score	Mech	Health Serv	Off Wk	Elec- tron.	Food Serv	Carp- entry	Sales Off.	Clean Hands	Out- doors	Raw Score
22										22
21										21
20			97							20
19		99	91		99					19
18		99	85		99					18
17	99	99	74		99					17
16	99	97	61		99		99			16
15	99	96	51	99	97		99			15
14	99	94	42	99	95	99	99			14
13	99	91	34	99	91	99	99			13
12	99	89	27	99	86	99	98	99	99	12
11	99	86	20	99	79	98	97	99	99	11
10	99	82	15	99	70	96	94	95	99	10
9	99	76	11	99	59	93	90	88	99	9
8	98	69	9	98	45	87	81	77	98	8
7	98	61	6	97	33	76	70	59	96	7
6	97	53	4	94	23	63	56	41	91	6
5	95	44	3	88	15	46	39	24	80	5
4	92	35	2	76	9	28	24	12	62	4
3	87	25	1	58	6	13	13	5	44	3
2	78	17	1	36	2	4	6	2	24	2
1	58	8	1	15	1	1	2	1	9	1
0	23	2	1	3	1		1	1	2	0
	N=551 M=1.30 SD=2.09	N=551 M=6.27 SD=4.23	N=551 M=14.16 SD=3.95	N=551 M=2.87 SD=1.89	N=551 M=8.41 SD=3.24	N=551 M=5.45 SD=2.21	N=551 M=5.82 SD=2.51	N=551 M=6.48 SD=2.03	N=551 M=3.46 SD=1.93	

MVII

Sales


23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
RAW SCORE
Mech.
Health Serv.
Off. Wk.
Elec-tron.
Food Serv.
Carp-entry
Sales Off.
Clean Hands
Out-doors

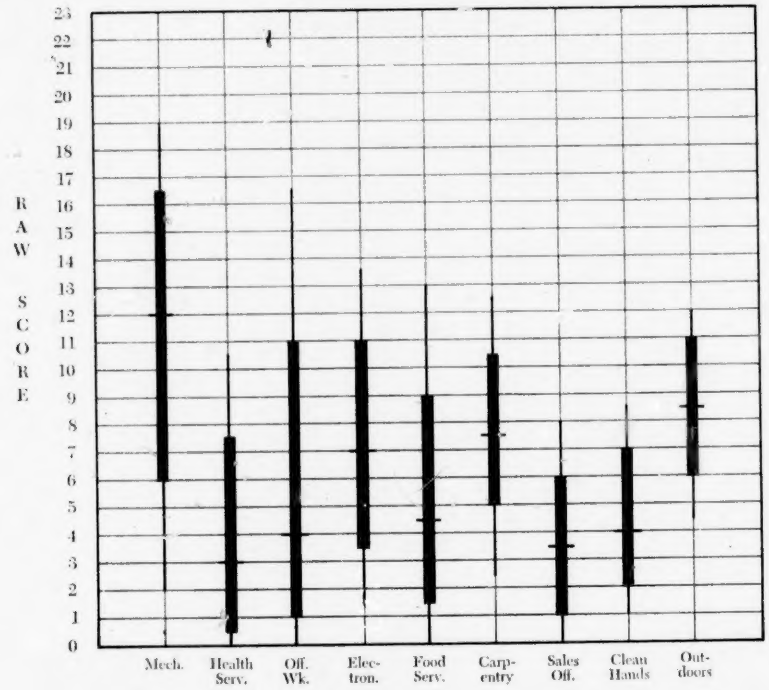
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

SALES

Raw Score	Mech	Health Serv	Off Wk	Elec-tron.	Food Serv	Carp-entry	Sales Off.	Clean Hands	Out-doors	Raw Score
22										22
21										21
20	99		99							20
19	99		99							19
18	98		97		99					18
17	96		94	99	99					17
16	94		91	99	99					16
15	93		85	99	98					15
14	93	99	79	98	96					14
13	91	97	73	97	94	99	99			13
12	88	95	65	97	92	98	96			12
11	87	94	56	96	88	96	93		98	11
10	85	93	50	94	83	90	86	98	94	10
9	81	92	46	91	79	82	78	93	87	9
8	75	88	39	85	75	72	69	84	77	8
7	71	80	33	76	68	59	58	71	68	7
6	66	71	28	68	58	48	46	56	58	6
5	59	63	22	59	48	35	34	42	44	5
4	50	53	17	48	36	19	22	27	30	4
3	42	38	10	36	22	10	12	10	19	3
2	32	25	4	22	10	5	7	1	12	2
1	18	12	2	10	4	1	4		4	1
0	5	3	1	3	1		1		1	0
	N=108 M=5.29 SD=4.86	N=108 M=4.47 SD=3.25	N=108 M=9.59 SD=4.81	N=108 M=4.72 SD=3.30	N=108 M=6.00 SD=3.69	N=108 M=6.36 SD=2.64	N=108 M=6.45 SD=3.01	N=108 M=5.68 SD=2.07	N=108 M=5.58 SD=2.74	

MVII

Agri-Technology



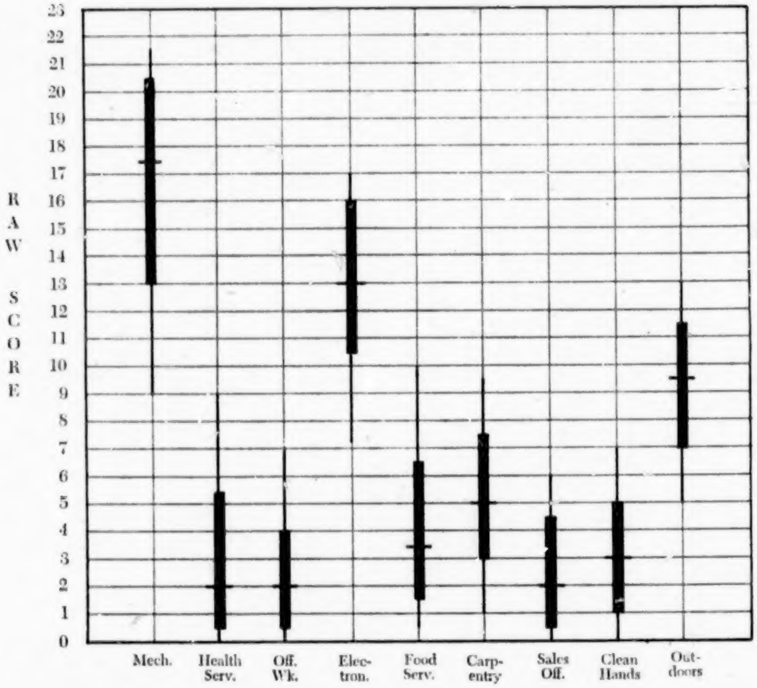
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

AGRI TECHNOLOGY

Raw Score	Mech	Health Serv	Off Wk	Elec-tron.	Food Serv	Carp-entry	Sales Off.	Clean Hands	Out-doors	Raw Score
22										22
21	99									21
20	98									20
19	95	99	99							19
18	90	99	98		99					18
17	86	99	96		99					17
16	80	99	94		99					16
15	72	99	93		97					15
14	66	98	92	97	97	99			99	14
13	57	98	90	91	95	97			98	13
12	50	98	86	88	92	92			94	12
11	44	97	82	83	89	87			87	11
10	38	94	79	77	87	80	99	99	73	10
9	33	90	77	69	83	67	96	97	58	9
8	27	86	74	60	77	56	95	93	43	8
7	21	81	70	52	69	45	92	86	29	7
6	17	74	63	41	60	31	85	74	18	6
5	14	66	55	30	53	19	78	62	9	5
4	11	62	48	21	44	13	64	45	3	4
3	9	50	39	13	33	8	43	29	2	3
2	6	33	27	7	21	3	27	16	2	2
1	2	20	16	2	11	1	15	4	1	1
0		7	6	1	4		5			0
N=115 M=11.37 SD=5.15	N=115 M=4.01 SD=3.51	N=115 M=5.65 SD=4.95	N=115 M=7.19 SD=3.58	N=115 M=5.41 SD=3.96	N=115 M =7.53 SD=2.95	N=115 M=3.50 SD=2.34	N=115 M=4.44 SD=2.18	N=115 M=8.34 SD=2.45		

MVII

Power and Home Electricity



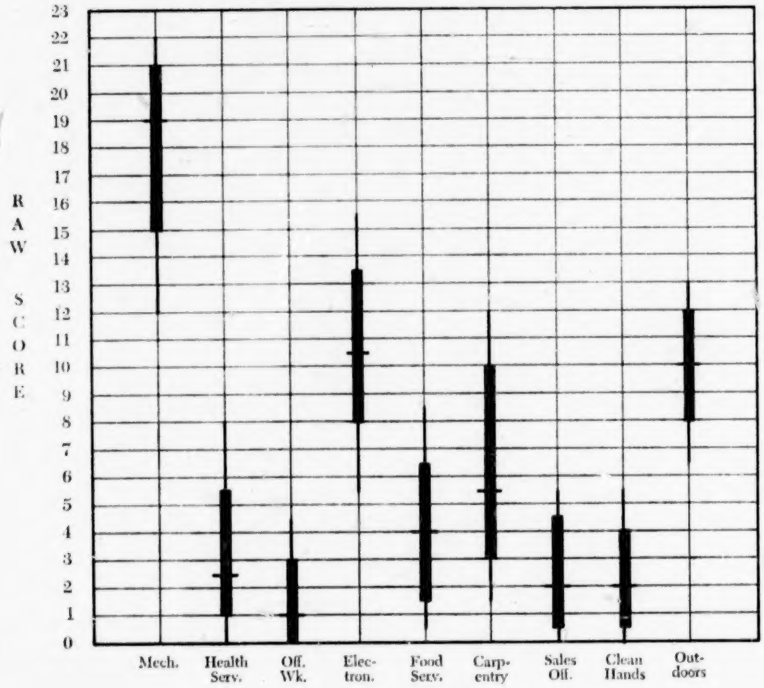
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

POWER AND HOME ELECTRICITY

Raw Score	Mech	Health Serv	Off Wk	Elec-tron.	Food Serv	Carp-entry	Sales Off.	Clean Hands	Out-doors	Raw Score
22	99									22
21	91									21
20	78									20
19	67									19
18	57									18
17	45			96	99					17
16	36			85	99	99				16
15	30	99		72	99	99				15
14	23	99		60	98	99			99	14
13	18	99	99	47	98	99			96	13
12	14	98	99	33	97	98			88	12
11	10	97	99	22	96	97			76	11
10	7	96	99	14	95	96			59	10
9	5	95	98	9	93	93	99	99	43	9
8	4	93	97	6	90	87	99	98	29	8
7	3	91	95	4	86	79	97	95	16	7
6	2	86	93	3	78	66	95	90	9	6
5	1	79	89	2	69	51	89	83	5	5
4	1	70	81	1	58	34	80	70	2	4
3	1	60	69	1	42	19	68	51	1	3
2	1	46	53	1	23	10	49	30	1	2
1	1	25	31		8	4	26	13		1
0	1	6	9		1	1	8	3		0
	N=207 M=16.57 SD=4.01	N=207 M=3.12 SD=2.92	N=207 M=2.38 SD=2.28	N=207 M=12.94 SD=2.93	N=207 M=4.18 SD=2.96	N=207 M=5.16 SD=2.56	N=207 M=2.40 SD=1.91	N=207 M=3.18 SD=1.94	N=207 M=9.28 SD=2.30	

MVII

Aircraft Mechanics



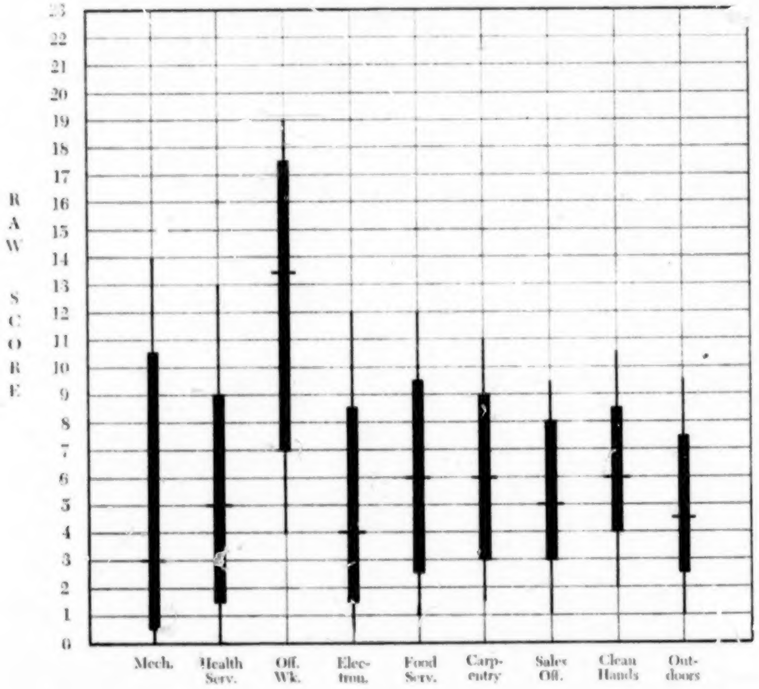
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

AIRCRAFT MECHANICS

Raw Score	Mech	Health Serv	Off Wk	Elec-tron.	Food Serv	Carp-entry	Sales Off.	Clean Hands	Out-doors	Raw Score
22	95									22
21	83									21
20	67									20
19	50									19
18	37									18
17	26			99						17
16	19			98						16
15	17			93						15
14	13			88		99			99	14
13	8			80		98			95	13
12	5	99		67	99	96			83	12
11	3	99		55	99	91			71	11
10	2	99		42	98	85	99		52	10
9	1	97		28	97	78	99		31	9
8		95	99	17	93	70	97	99	16	8
7		92	98	11	89	63	96	99	7	7
6		85	98	7	78	56	93	97	4	6
5		80	97	3	65	44	89	92	2	5
4		74	94	2	53	28	79	85	1	4
3		57	87	1	39	17	66	71		3
2		36	75		21	8	50	46		2
1		18	48		7	3	27	22		1
0		5	16		2	1	8	6		0
	N=103 M=18.24 SD=3.05	N=103 M=3.13 SD=2.42	N=103 M=1.41 SD=1.55	N=103 M=10.58 SD=2.86	N=103 M=4.09 SD=2.41	N=103 M=6.14 S=3.19	N=103 M=2.49 SD=2.11	N=103 M=2.33 SD=1.65	N=103 M=9.89 SD=1.95	

MVII

Data Processing



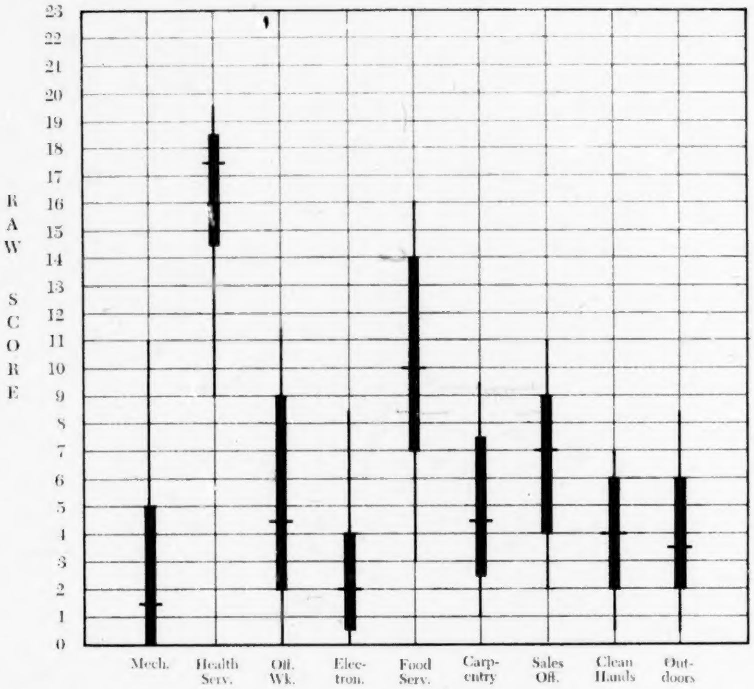
MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

DATA PROCESSING

Raw Score	Mech	Health Serv	Off Wk	Elec-tron.	Food Serv	Carp-entry	Sales Off.	Clean Hands	Out-doors	Raw Score
22										22
21										21
20			98							20
19			94							19
18	99		88							18
17	99		80							17
16	98	99	71	99						16
15	97	98	62	99	99					15
14	95	96	53	98	98			99		14
13	92	95	44	97	97	99	99	99		13
12	89	94	39	95	95	98	99	99		12
11	85	92	33	92	90	96	98	97	99	11
10	82	88	26	89	85	91	96	94	98	10
9	79	83	20	86	80	86	93	86	93	9
8	75	78	18	81	73	77	85	77	87	8
7	73	71	17	75	63	65	74	66	79	7
6	68	61	13	69	52	50	61	50	69	6
5	62	51	8	64	43	35	46	32	56	5
4	56	40	5	53	35	25	30	18	40	4
3	49	30	3	37	24	16	17	9	26	3
2	41	22	1	22	14	7	9	4	14	2
1	31	13	1	8	6	1	4	1	5	1
0	12	4		1	1		1	1	1	0
	N=157 M=4.65 SD=4.76	N=157 M=5.34 SD=3.79	N=157 M=12.77 SD=4.68	N=157 M=4.84 SD=3.50	N=157 M=5.92 SD=3.48	N=157 7=6.05 SD=2.71	N=157 M=5.39 SD=2.48	N=157 M=6.18 SD=2.42	N=157 M=4.83 SD=2.48	

MVII

Medical Laboratory Assistant



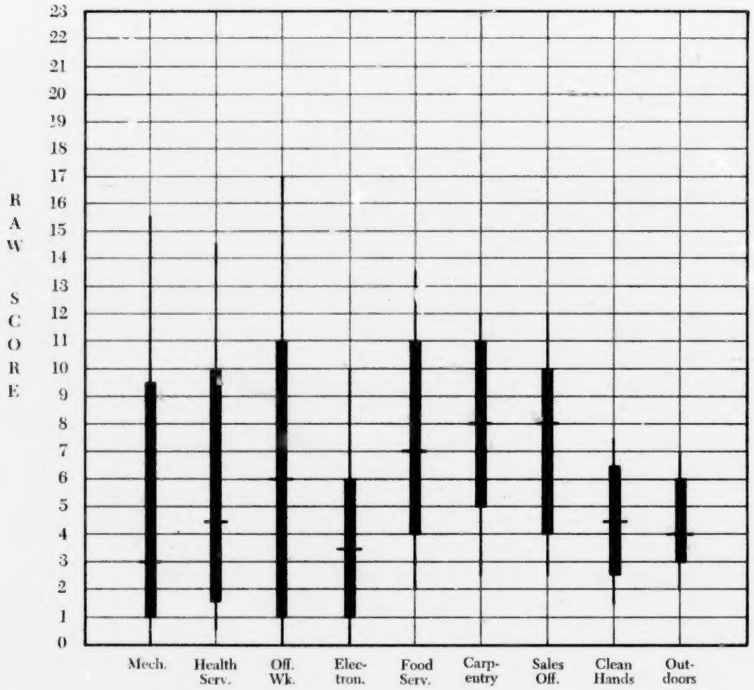
MINNESOTA VOCATIONAL INTEREST INVENTORY PROJECT MINI-SCORE TRAINING NORMS

MEDICAL LABORATORY ASSISTANT

Raw Score	Mech	Health Serv	Off Wk	Elec-tron.	Food Serv	Carp-entry	Sales Off.	Clean Hands	Out-doors	Raw Score
22										22
21										21
20	99									20
19	98	93								19
18	98	70								18
17	98	45								17
16	98	28			96					16
15	98	19			90					15
14	97	16			84					14
13	96	13	99		76		99			13
12	96	10	96		66		97			12
11	95	7	94		58		95			11
10	93	6	92	99	50	98	91		99	10
9	91	5	85	97	39	93	82		97	9
8	89	4	77	94	27	87	66		93	8
7	86	4	68	90	18	78	47	97	86	7
6	84	4	60	88	14	65	34	87	82	6
5	82	4	53	87	11	54	28	73	74	5
4	79	4	43	84	8	41	17	56	58	4
3	77	4	29	72	5	23	8	34	40	3
2	66	4	18	53	3	11	5	17	20	2
1	44	4	12	29	1	5	3	7	7	1
0	15	2	4	7		1	1	1	2	0
	N=49 M=2.73 SD=4.08	N=49 M=16.02 SD=3.96	N=49 M=5.20 SD=3.38	N=49 M=2.51 SD=2.43	N=49 M=10.04 SD=3.75	N=49 M=4.94 SD=2.47	N=49 M=6.78 SD=2.69	N=49 M=3.78 SD=1.75	N=49 M=3.92 SD=2.30	

MVII

Interior Design and Sales Assistant



MINNESOTA VOCATIONAL INTEREST INVENTORY
PROJECT MINI-SCORE TRAINING NORMS

INTERIOR DESIGN AND SALES ASSISTANT

Raw Score	Mech	Health Serv	Off Wk	Elec-tron.	Food Serv	Carp-entry	Sales Off.	Clean Hands	Out-doors	Raw Score
22										22
21										21
20										20
19	99		99							19
18	98		97							18
17	98		95		99					17
16	97	99	94	99	98					16
15	94	97	91	98	98		99			15
14	92	94	89	97	96		98			14
13	90	92	89	96	94	98	98			13
12	88	91	88	96	90	94	96			12
11	87	87	84	96	82	87	92			11
10	86	82	80	95	76	76	80			10
9	81	77	72	94	71	63	64			9
8	76	69	64	93	63	53	52	97	99	8
7	74	61	57	87	48	41	41	90	94	7
6	71	57	51	81	35	25	31	79	87	6
5	63	54	43	73	26	16	24	64	71	5
4	56	44	34	59	16	11	15	43	42	4
3	49	34	30	43	8	6	7	22	15	3
2	38	23	25	28	5	3	3	9	4	2
1	21	10	17	18	2	2		3	2	1
0	6	2	6	6		1		1	1	0
	N=54 M=4.85 SD=4.77	N=54 M=5.76 SD=4.23	N=54 M=6.46 SD=5.00	N=54 M=3.89 SD=3.20	N=54 M=7.43 SD=3.42	N=54 M=7.74 SD=2.84	N=54 M=7.50 SD=2.90	N=54 M=4.43 SD=1.81	N=54 M=4.35 SD=1.42	